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ABSTRACT

A description is provided of Project BEST (Building Energy Systems Technology), bilingual vocational training program offered to speakers of Spanish and Polish through Oakton College's adult continuing education program. Part I of the report provides a program overview, indicating that Project BEST teaches limited English proficient students the basics of heating, refrigeration, and air conditioning in order to enable graduates to obtain entry-level jobs in the field. Introductory material stresses that, in addition to practical hands-on training, students receive intensive job-specific Vocational English as a Second Language (VESL) instruction, as well as support services such as bilingual tutoring, personal counseling, and help in finding and retaining a job. This section includes information on program specifications, recruitment and screening of students, student orientation to training, descriptions of the VESL and vocational components of the training, coordination of VESL and vocational components, job development services, counseling services, and evaluation. Part II offers a curriculum overview, covering curriculum goals, curriculum modification, rationale for competency-based curriculum, instructional format and techniques, vocational competencies, VESL competencies, and job finding/keeping competencies. (EJV)

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ED285625

Project BEST

Program and Curriculum Overview

Bilingual Vocational Training
in
Heating, Refrigeration and Air Conditioning
for
Limited English Proficient Adults

Oakton Community College/MONNACEP
Des Plaines, Illinois

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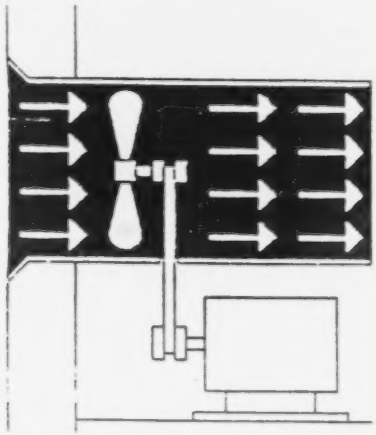
JC 870 397

Project BEST Program and Curriculum Overview

Bilingual Vocational Training
in
Heating, Refrigeration and Air Conditioning
for
Limited English Proficiency Students



Submitted to the
Office of Bilingual Vocational Education, U.S.D.E.
August, 1987

David Pankratz, Project BEST Coordinator

Oakton Community College
MONNACEP Adult Continuing Education Program
1600 E. Golf Rd.
Des Plaines, IL 60016

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I.

PROGRAM OVERVIEW

A. Introduction

The purpose of this document is to briefly describe Project BEST. It is our hope that the reader can gain some insight into the workings, difficulties, and rewards of a bilingual vocational training project such as this one. Our program is still evolving, and thus we would like to point out that the materials presented here should not be seen as a "finished product"; one of the many challenges we have faced is the recognition that we must continually modify our program to more effectively meet the needs of our students and the community.

Anyone interested in a more detailed look at the Vocational English as Second Language (VESL) component of the program may want to refer to a separate document entitled Project BEST VESL Curriculum.

B. Program Description

Project BEST (Building Energy Systems Technology) is a bilingual vocational training program funded by a federal grant from the Office of Bilingual Vocational Education, U.S. Department of Education. The program began in March, 1986 at Oakton Community College at the Des Plaines, Illinois campus. Training is tuition-free, and is offered through MONNACEP, Oakton College's adult continuing education program. In Project BEST, limited English proficient (LEP) students learn the basics of heating, refrigeration and air conditioning. The ultimate goal of training is to enable graduates to obtain entry level jobs in this vocational field. In addition to practical hands-on training, students receive intensive job-specific English as a Second Language instruction. The program also offers support services such as bilingual tutoring, personal counseling and help in both finding and retaining a job. This type of comprehensive approach to vocational education for the limited English proficient individual is based on a model termed bilingual vocational training, or simply "BVT."

The vocational component of BVT programs normally emphasizes hands-on, competency based training as opposed to extensive lecture or theory. In Project BEST a lab manual with step-by-step procedures for lab tasks serves as framework for instruction. Traditionally, most bilingual vocational programs have delivered the vocational content in the students' native language. In our program, however, the vocational content is initially presented in English. This approach has worked well for us, and allows more than one language group to participate in the vocational lab at one time. (Since the program began, each of three

training cycles have served speakers of Spanish and Polish.) Although students must thus possess fundamental English skills in order to enter the program, the students of each language group have a bilingual tutor who is present in the lab at all times to reinforce and elaborate on the vocational content in the native language. Given a hands-on, visually oriented teaching style in conjunction with native language tutoring, limited English proficiency is not a substantial barrier to the vocational training.

C. Program Rationale

The objective of bilingual vocational training (henceforth BVT) programs is to offer people with limited English communication skills the chance to overcome their barriers to employment by participating in a form of vocational training which utilizes the native language(s) to a significant degree. The use of the native language as well as English speeds the learning process considerably. This type of approach enables people to enter the working economy more quickly, and at least in some cases, eliminate dependence on social programs. Ideally, BVT programs train not for just any job, but for a job with career potential. Crucial to the concept of bilingual vocational training is the belief that the motivation to learn English is substantially higher when vocational skills are being acquired simultaneously. In sum, BVT program graduates are expected to be knowledgeable in the basics of a particular vocational field, more adept at communicating in English, and ultimately more employable.

D. Project BEST Program Specifications

Training Site: Heating, Refrigeration, and Air Conditioning Vocational Lab at Oakton Community College, Des Plaines, IL. The vocational lab encompasses app. 3000 sq. ft. and houses all tools, supplies and equipment necessary for coursework in the college's degree programs. Commercial and mock-up trainers are used for hands-on practice in electricity, refrigeration and heating. Space permitting, students are encouraged to bring in their own refrigeration and air conditioning units for further practice.

Number of trainees in each cycle: 20

Languages: Spanish and Polish

Staff:
1 Project Coordinator, Full-time
1 Vocational English as a Second Language(VESL) Instructor, Part-time
1 Vocational Instructor, Part-time
2 Bilingual Tutors (1 Spanish, 1 Polish), Part-time
1 Job Developer, Part-time
1 Counselor, Part-time
1 Clerical Assistant, Part-time

Training Schedule: 15-week cycle, 5 days per week, M-F, 9:00 a.m.-3:00 p.m.

Class Schedule:
9:00-11:30 VESL Class
11:30-12:00 Lunch
12:00-3:00 Vocational Lab

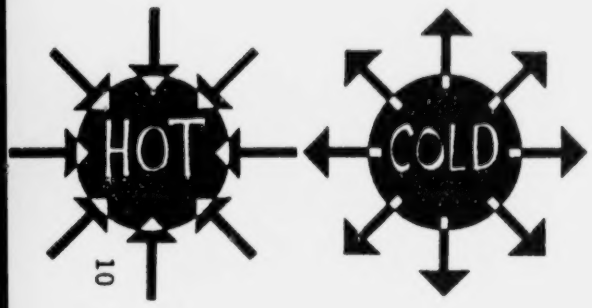
E. Recruitment

Students are recruited for the program by the project staff. A multi-faceted community outreach campaign is conducted to reach potential participants. Program brochures are distributed to schools, libraries, community centers and churches. Public service announcements are aired on native language radio and television programs, and appear in native language newspapers. Information about the program and how to apply is presented at schools and community centers by the project coordinator. Every conceivable and often creative method of reaching potential participants is encouraged.

On the following two pages are copies of the outside and inside of a sample Project BEST recruitment brochure. The brochure includes the basic information on training and eligibility.

BEST

BUILDING ENERGY SYSTEMS TECHNOLOGY



10

BUILD YOUR FUTURE

12

OAKTON COMMUNITY COLLEGE
MONNACEP/BEST
1600 East Golf Road
Des Plaines, IL 60016

Non-Profit Org.
U.S. Postage
PAID
Permit No. 385
Des Plaines, IL

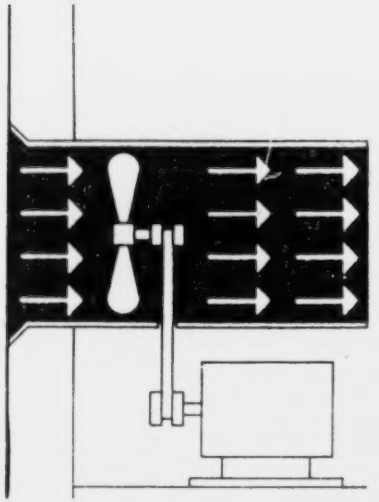
DO YOU SPEAK ESPAÑOL or po polsku as your native language?

OAKTON COMMUNITY COLLEGE/MONNACEP
presenta/przedstawia/presents

- Un Programa Billingüe de Entrenamiento Vocacional en CALEFACCIÓN/AIRE ACONDICIONADO

- zawodowy dwu-jezyczny szkolenlowy program w HEATING/AIR CONDITIONING,

- Bilingual Vocational Training Program in HEATING/AIR CONDITIONING



BEST Program
Building Energy Systems Technology
(312)635-1884

13

ESPAÑOL Men & Women! PO POLSKU

FREE

HEATING/AIR CONDITIONING VOCATIONAL TRAINING PROGRAM

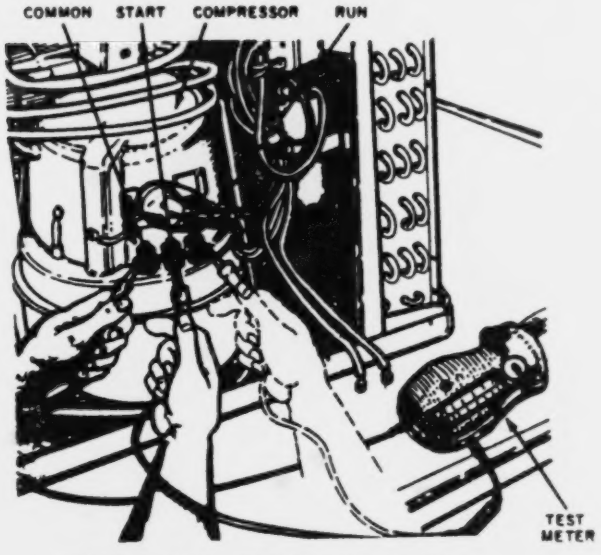
for

ENGLISH AS A SECOND LANGUAGE STUDENTS WHO SPEAK SPANISH OR POLISH

BEGINS MARCH 2

At Oakton Community College

- Vocational instruction
- Lab work
- Bilingual tutoring
- Counseling
- Job-related English
- Job search assistance



- 15 week classes
- 9:00-3:15, M-F
- No tuition
- Qualified teachers
- Job search follows
- Apply before February 18

Sponsored by the
U.S. Department of Education

THE REWARD FOR HARD WORK CAN BE A BEGINNING JOB IN HEATING/AC SERVICE

Applicants must be:
- Age 18 or older
- U.S. Citizen or Resident
- Spanish or Polish Speakers with Intermediate English Skills

INTERESTED?
CALL 635-1884

APPLICATION DEADLINE
FEBRUARY 18, 1987

David Pankratz,
Project BEST
Coordinator

OAKTON COMMUNITY COLLEGE **MONNACEP/BEST** **1600 EAST GOLF ROAD, DES PLAINES, IL 60016**

Project BEST

Recruiting Statistics

Cycle:

	Language groups
No. recruited	
No. screened	
No. accepted	
Attended 1st day	
Attended 2nd week	

How did people hear about the program?

	Those Recruited	Those Screened	Those Accepted
Newspaper			
Radio			
Television			
CBO's			
Schools			
Other			
Unspecified			
Total			

F. Screening

During the recruitment campaign applicants are encouraged to call the Project BEST office if they are interested in applying for the program. When calls come in, a staff member fills out an initial intake form (see page 14). If the caller is eligible for training and it is determined that the program addresses his/her needs, a screening appointment is made. Screening takes place at the college and is designed to make program objectives clear to the applicant, confirm the applicant's interest in the training, and to assess the applicant's knowledge of basic skills thought to be pivotal to the vocational area. Skills assessed include: speaking and reading ability in English, basic math, and understanding of basic mechanical concepts.

To assess oral proficiency in English, Project BEST uses the Language Proficiency Interview (LPI), a modified version of the Foreign Service Institute oral test. Pronunciation, grammar vocabulary, fluency and comprehension are assessed using this instrument (see pages 15-21). Both reading ability (p.22) and basic math skills (pp.23-24) are assessed using project-developed instruments. Mechanical aptitude is measured in the applicant's native language with an instrument adapted and translated by the program (samples on pp.25-29). Applicants are also asked to fill out a "Student Profile" to provide the staff with information about their background (pp.30-31), as well as a statement of their personal interest in the program which they write in their native language (pp.32-33).

If the outcome of the screening session is positive, the applicant is asked to return for a final interview shortly before training begins. This final interview verifies the applicant's interest in the program and his/her commitment to complete training (pp.34-37).

Project BEST

Intake for for Inquiries/Applications
Information taken by_____on_____
initial date

Estimated English Language Proficiency
very poor_____
poor_____
adequate_____
good_____
very good_____
excellent_____

Name of Inquirer_____Applicant? yes____no____

Address_____ Reference_____

_____Phone_____When to call_____

Applicant's name (if different)_____

Address_____

_____Phone_____When to call_____

Language_____Can read/write in native Language?_____

*Citizen of U.S.?_____Resident?_____Alien Reg. no._____

*Age 18 or older?_____How long in U.S.?_____

Employment

Current job_____No. of hrs./wk._____

Work schedule_____Pay_____

Satisfied with work?_____

Comments_____

Education

Completed grade_____in (country)_____

Higher education?_____

*Seriously interested in AC/Refr./Htg.?_____...working full-time?_____

*Available for training 9:00-3:15, M-F, Sept. 22 thru Mid-Feb.?_____

Have transportation to OCC?_____

Comments_____

_____

_____

*minimum requirements

Screening appointment/Rm. 2671

Date_____Time_____

Interview appointment

Date_____Time_____

Staff: Please thank applicant for calling! Acc/Rej. letter sent_____

Project BEST

LPI (Language Proficiency Interview)

Oral interview, 5-15 minutes.

Purpose: To assess comprehension, speaking ability in English.

Method: Attempt to elicit natural, flowing conversation by asking interviewee general questions.

Procedure: Interviewer begins with simple questions, both in grammar and in content; it is important to put person at ease. Interviewer then proceeds from simpler to more complex questions--again, both in grammar and content. Interview is terminated when interviewer feels interviewee has demonstrated maximum capabilities.

Grammar tenses	Content areas
present	personal (introduction, welcome, address, language, country, etc.)
present continuous	family (relatives, their whereabouts, occupations, etc.)
present perfect	education and work experience in U.S.
simple past	education and work experience in native country
future	plans, goals (personal, school-related, job-related)
conditional	hypothetical events, goals
(passive)	

Interviewer thanks interviewee for interview.

Proficiency Descriptions

Numerical Rating Procedure

Instructions: For all of the five language areas (Pronunciation, Grammar, Vocabulary, Fluency, Comprehension), choose the Proficiency Descriptions--from 1 to 6--which best represent the competence of the student. Then, in the Weighting Table, find the number corresponding to each of the five descriptions* and add all five numbers. Then determine from the Conversion Table the rating level within which to total score falls. Please bear in mind that this numerical procedure is intended only to supplement the official verbal descriptions and should not be used by itself to determine a rating.

Note also that the numbers 1 through 5 are simply used to designate the different proficiency descriptions for each language area and do not have any direct relationship to the official rating levels of 1 through 5.

Weighting Table (modified for BEST)

Proficiency Description →	1	2	3	4	5	6	
Accent	0	1	2	2	3	4	____
Grammar	4	8	12	16	20	24	____
Vocabulary	4	8	12	16	20	24	____
Fluency	4	8	12	16	20	24	____
Comprehension	4	8	12	15	19	23	____

Total: ☐

Conversion Table

Total Score (from Weighting Table)	Level	Total Score	Level	Total Score	Level
16-25	0+	43-52	2	73-82	3+
26-32	1	53-62	2+	83-92	4
33-42	1+	62-72	3	92-99	4+

*After some practice with this procedure, you may in some cases want to give a score that is "in-between" two of the descriptions. For example, if you feel the student's competence in Grammar is about midway between description 3 ("Frequent errors showing ..." and description 4 ("Ocassional errors showing..'), you might give a weighted score of 21 for Grammar, rather than 18 or 24.

Language Proficiency Interview (LPI)

Rating Scales

Name: _____

Date: _____

Interviewer: _____

Accent	1	2	3	4	5	6
Grammar	1	2	3	4	5	6
Vocabulary	1	2	3	4	5	6
Fluency	1	2	3	4	5	6
Comprehension	1	2	3	4	5	6

Comments

Proficiency Descriptions

Accent

1. Pronunciation frequently unintelligible.

2. Frequent gross errors and a very heavy accent make understanding difficult, require frequent repetition.

3. "Foreign accent" requires concentrated listening and mispronunciations lead to occasional misunderstanding and apparent errors in grammar or vocabulary.

4. Marked "foreign accent" and occasional mispronunciations which do not interfere with understanding.

5. No conspicuous mispronunciations, but would not be taken for a native speaker.

6. Native pronunciation, with no trace of "foreign accent".

Grammar

1. Grammar almost entirely inaccurate except in stock phrases.

2. Constant errors showing control of very few major patterns and frequently preventing communication.

3. Frequent errors showing some major patterns uncontrolled and causing occasional irritation and misunderstanding.

4. Occasional errors showing imperfect control of some patterns but no weakness that causes misunderstanding.

5. Few errors, with no patterns of failure.

6. No more than two errors during the interview.

Vocabulary

1. Vocabulary inadequate for even the simplest conversation.

2. Vocabulary limited to basic personal and survival areas (time, food, transportation, family, etc.)

3. Choice of words sometimes inaccurate, limitations of vocabulary prevent discussion of some common professional and social topics.

4. Professional vocabulary adequate to discuss special interests; general vocabulary permits discussion of any non-technical subject with some circumlocutions.

5. Professional vocabulary broad and precise; general vocabulary adequate to cope with complex practical problems and varied social situations.

6. Vocabulary apparently as accurate and extensive as that of an educated native speaker.

Fluency

1. Speech is so halting and fragmentary that conversation is virtually impossible.

2. Speech is very slow and uneven except for short or routine sentences.

3. Speech is frequently hesitant and jerky; sentences may be left uncompleted.

4. Speech is occasionally hesitant, with some uneveness caused by rephrasing and groping for words.
5. Speech is effortless and smooth, but perceptibly nonnative in speed and evenness.
6. Speech on all professional and general topics as effortless and smooth as a native speaker's.

Comprehension

1. Understands too little for the simplest type of conversation.

2. Understands only slow, very simple speech on common social and touristic topics; requires constant repetition and rephrasing.

3. Understands careful, somewhat simplified speech directed to him, with considerable repetition and rephrasing.

4. Understands quite well normal educated speech directed to him, but requires occasional repetition or rephrasing.

5. Understands everything in normal educated conversation except for very colloquial or low-frequency items, or exceptionally rapid or slurred speech.

6. Understands everything in both formal and colloquial speech to be expected of an educated native speaker.

LINGUISTIC AREAS TO BE RATED

Pronunciation and Accent

A pronunciation which is sufficiently accurate to avoid confusion as to the particular sounds which the student intends is important to effective communication, and this aspect of the student's speech is evaluated in the course of the conversation. Beyond this, the student's degree of command of a phonetically accurate pronunciation (the absence of obviously non-native elements of accent, intonation and phrasing) is also taken into account, though to a lesser degree.

Grammatical Accuracy

In the Peace Corps language training program, considerable emphasis is placed on the development of grammatical accuracy. Since structure is indeed the backbone of the language, entering into each sentence produced regardless of the particular topic of vocabulary involved, it is reasonable and desirable that the Peace Corps program stress the development of an accurate structural command of the language. Given a good structural control of the host country language, the student should be able to develop a broader vocabulary and to increase his level of fluency through practice in the field. It is doubtful, however, that the student will greatly increase his structural accuracy in the field, since the Peace Corps experience has been that extensive practice in a formal and controlled (i.e., classroom) situation is usually required to master grammatical structures, especially those which differ from structures in the student's native language.

To check the student's level of grammatical control, the interviewers will typically attempt to stimulate a discussion of topics which require or suggest the use of various verb moods, tenses, and persons beyond the simple narrative present and and the first person ("I") forms. The accurate use of adjectives, adverbs, prepositions, and other aspects of language structure will also be evaluated in the course of the interview.

Vocabulary

The extent of the student's spoken vocabulary is noted throughout the course of the interview. Emphasis is placed on a wide-ranging vocabulary which allows the student to talk freely and accurately on a number of different topics, including but by no means restricted to vocabulary appropriate to his work assignment. The best preparation for the vocabulary aspect of the interview is not a last-minute study of a word lists but rather the gradual and natural accumulation of vocabulary through classroom work together with extensive outside exposure to the language through films, conversations with native speakers or more advanced students, and so forth.

Fluency

Fluency does not refer here to the absolute speed of delivery, since native speakers of any language often show wide variation in this area. Fluency, for purposes of the interview, refers to the overall smoothness, continuity, and naturalness of the student's speech, as opposed to pauses for rephrasing sentences, groping for words, and so forth.

Listening Comprehension

It is difficult to evaluate listening comprehension in a highly objective manner using a conversational technique. If a student is able to carry out a rather sophisticated conversation on the basis of spoken leads and comments given by the interviewer, it is reasonably certain that the student has acquired a listening comprehension proficiency at least up to the level represented by the general nature of the conversation. It is, however, possible that the student's listening proficiency as such could be quite high, but that limitations in his ability to speak the language would prevent his from responding readily to questions or conversational leads which he understood perfectly well. Plans are currently being made to develop a test of listening comprehension for Peace Corps use which would be administered independently of the language proficiency interview to provide additional information about this area of the student's language competence. In the meanwhile, students' listening comprehension ability will continue to be judged albeit somewhat roughly, on the basis of the face-to-face interview. The interviewers are instructed to give the benefit of the doubt to the student, and to assume as a matter of course that his listening proficiency is at least on a level with his interview performance.

Source: Business Education for Career Advancement Project
Arlington Heights, Illinois

BEST Project

CLOZE TEST

Name _____ Date _____

Below are two paragraphs from an air conditioning/refrigeration/heating textbook. Several words have been taken out. You must decide what word goes in each blank. (1) Before you write, read the paragraphs quickly. (2) Then read them again carefully and write only one word in each blank. The word must fit the sentence. When you finish, read the paragraphs again to make sure your words fit. (Some blanks have already been filled in for you.)

This is your training section, and it contains ___all___ of the theory you will receive while you ___are___ learning to service air conditioning and refrigeration equipment. _____ are not going into the theory of refrigeration _____ great detail. It is enough that you have _____ reasonable understanding of the physical laws _____ are the basis for the refrigeration cycle. This information will not repair any refrigerator or _____ you one dollar. However, it _____ lay a foundation for you to build a _____ trade on. You will be a _____ efficient trouble shooter if you have this information _____ the back of your head. Keep it in ___the___ back of your head and your hands will ___travel___ faster and surer.

You may never have given it much ___thought___. but a refrigerator in your home, the ___one___ you keep your food in, is a ___box___ where there is a mechanical unit taking ___the___ heat out of the inside and everything ___that___ is stored inside. The unit is not putting something _____ the box which was not there before. _____ refrigerating unit is not imparting some quality to the inside. All _____ is doing is pulling the heat out and getting rid _____ it on the outside of the box. The insulation in the box keeps heat from getting back in too fast. Then there _____ a constant struggle for the machinery to _____ the heat out of the box and to try to keep enough of it out so that there is less heat on the inside than on the _____. The reason water in your _____ cube trays turns to ice is that the _____ was pulled out of _____ water until it reached 32 _____ and then it turned solid. As a matter of ___fact___, an ice cube is very hot if ___we___ remember that cold begins at 460 degrees ___below___ zero.

Project BEST

MATH TEST

1. $\begin{array}{r} 4,725 \\ 257 \\ 1,635 \\ +\ 445 \\ \hline \end{array}$

A 7,062
B 7,071
C 7,942
D 8,072

2. $\frac{1}{3} + \frac{1}{3} =$

A $\frac{1}{6}$
B $\frac{1}{3}$
C $\frac{1}{2}$
D $\frac{2}{3}$

3. $5^2 + 899 =$

A 904
B 909
C 924
D 951

4. $\frac{1}{4} + \frac{1}{8} =$

A $\frac{1}{12}$
B $\frac{1}{6}$
C $\frac{1}{4}$
D $\frac{3}{8}$

5. $0.03 + 0.134 + 0.7305 =$

A 0.7442
B 0.8945
C 7.945
D 8.942

6. $\begin{array}{r} 3,570 \\ -\ 2,680 \\ \hline \end{array}$

A 810
B 890
C 990
D 1,090

7. $\frac{1}{4} - \frac{1}{8} =$

A $\frac{1}{8}$
B $\frac{3}{8}$
C $\frac{1}{2}$
D $\frac{3}{4}$

8. $42\frac{1}{2} - 12.25 =$

A 29.25
B 29.75
C 30.15
D 30.25

9. $57.240 - 15.13 =$

A 41.310
B 42.110
C 55.627
D 55.727

10. $\begin{array}{r} 956 \\ \times\ 40 \\ \hline \end{array}$

A 3,824
B 36,240
C 38,140
D 38,240

YOU MAY WRITE ON THIS TEST

11. $\frac{4}{5} \times \frac{5}{8} =$

A $\frac{1}{8}$
B $\frac{1}{2}$
C $\frac{25}{32}$
D $1\frac{1}{3}$

12.
$$\begin{array}{r} 14.65 \\ \times \quad 20 \\ \hline \end{array}$$

A 28.30
B 29.30
C 292.00
D 293.00

13. $\frac{2}{3} \div \frac{2}{3} =$

A $\frac{1}{3}$
B $\frac{4}{9}$
C $\frac{2}{3}$
D 1

14. $1 \div \frac{1}{4} =$

A $\frac{3}{4}$
B $1\frac{1}{4}$
C 2
D 4

15. $8.04 \div 3 =$

A 2.24
B 2.66
C 2.68
D 26.80

16. $426 \div 4 =$

A 96 R 2
B 106 R 2
C 111 R 2
D 160 R 2

17. 75% of 4 =

A 1.5
B 3
C 5
D 3.75

18. 80% of 10,000 =

A 80
B 800
C 8,000
D 180

19. $\frac{2}{5} = \frac{?}{20}$

A 4
B 8
C 10
D 12

20. $3(5+14) =$

A 57
B 29
C 47
D 22

END

POR FAVOR, NO ESCRIBA SOBRE EL PAPEL

PRUEBA DE RAZONAMIENTO MECANICO

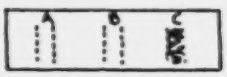
INSTRUCCIONES:

En esta prueba encontrara un numero de graficas y una pregunta para cada una de ellas. Mire el ejemplo X en esta pagina para que entienda lo que tiene que hacer. El ejemplo X muestra a dos hombres cargando una pieza de maquinaria en una tabla. La pregunta es; Cual de los dos hombres lleva la carga mas pesada? y entre parentesis anade, (Si igual, marque C.) La respuesta correcta es B porque la pieza esta mas cercana al hombre B que al hombre A. Por lo tanto, usted debe obscurecer el espacio bajo la letra B en la hoja de respuestas.

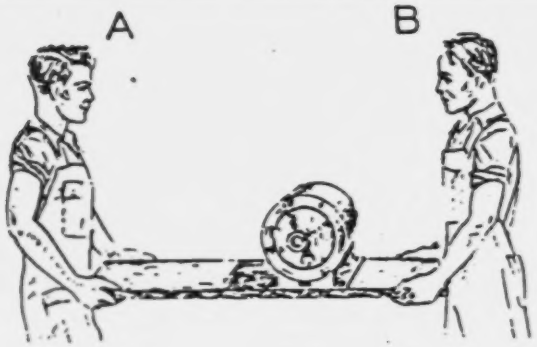
Ahora mire el ejemplo Y. La pregunta es; Cual es mas pesado? (Si igual, marque C.). Como la escala esta perfectamente balanceada, entonces A y B deben pesar lo mismo por lo tanto usted debera obscurecer el espacio bajo la letra C en la hoja de respuestas.

ejemplo X

A (B) C

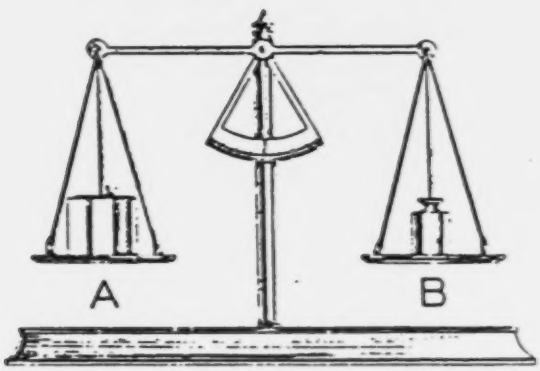
ejemplo Y 

A B (C)



X

Cual de los dos hombres lleva la carga mas pesada? (Si igual, marque C.)



Y

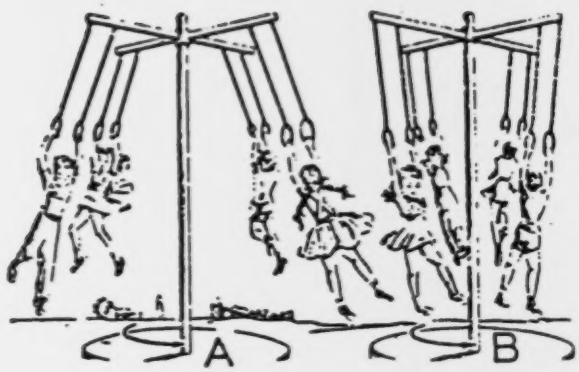
Cual es mas pesado? (Si igual, marque C.)

A continuacion va a encontrar mas graficas y preguntas. Lea cada pregunta cuidadosamente, mire la grafica y marque su respuestas en la hoja de respuestas. Recuerde que cada pregunta tiene tres posibles respuestas.

Tiene 30 minutos para completar la prueba. Trabaje de la forma mas rapida y precisa que pueda. Si no esta seguro de una respuesta, marque la que usted crea se acerque mas a la correcta.

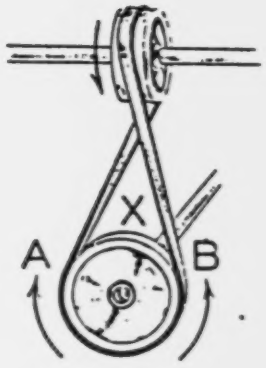
POR FAVOR NO ESCRIBA SOBRE EL PAPEL

NO ESCRIBA SOBRE ESTA HOJA



1

En cuál están los niños girando con mayor velocidad?
(Si igual, marque C.)

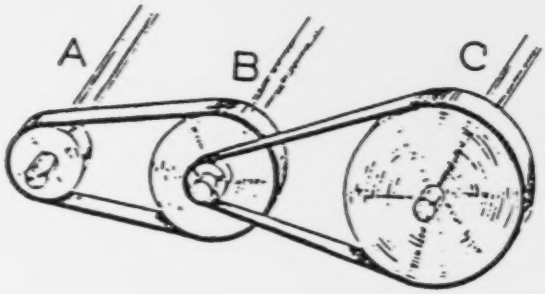


2

Cuando la polea de arriba da vuelta en la dirección indicada, En que dirección dará vuelta la de abajo?
(Si cualquiera, marque C.)

3

Cuál de las dos podrá levantar la aspiradora mas facilmente?
(Si igual, marque C.)



4

Cuál eje va a ~~volcar~~ girar mas lentamente?

Test zdolności mechanicznych

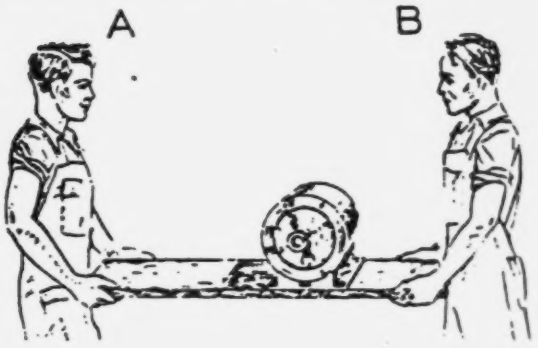
Instrukcje:

W tym teście znajdziecie rysunki i pytania dotyczące tych rysunków. Prosimy spojrzeć na przykład x na tej stronie, który pomoże wam zrozumieć co musicie zrobić. Przykład x pokazuje dwóch mężczyzn niosących ciężki przedmiot na desce. Pytanie brzmi: Który, z dwóch mężczyzn dźwiga cięższy ładunek? W nawiasach widzicie (Nie ma różnicy, zaznaczyć C). Prawidłową jest odpowiedź B, ponieważ ciężki przedmiot znajduje się bliżej mężczyzny B, niż A. W ten sposób musicie zakreślić literkę B na karcie odpowiedzi.

Teraz spójrzcie na przykład y. Pytanie brzmi: Który z przedmiotów jest cięższy? (Nie ma różnicy, zaznaczyć C). Odpowiedzią prawidłową jest odpowiedź C, ponieważ waga znajduje się w stanie równowagi przeto obydwa przedmioty ważą tyle samo. Zakreślcie odpowiedź C na karcie odpowiedzi.

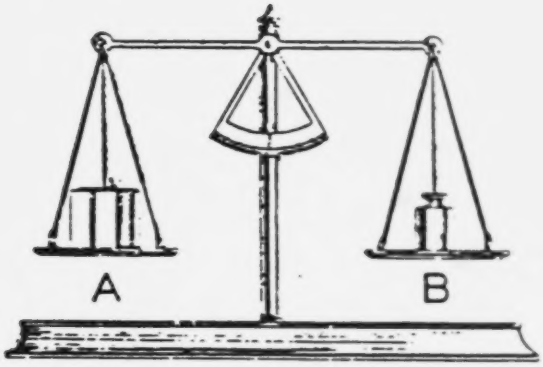
przykład x [A (B) C]

przykład y [A B (C)]



przykład x

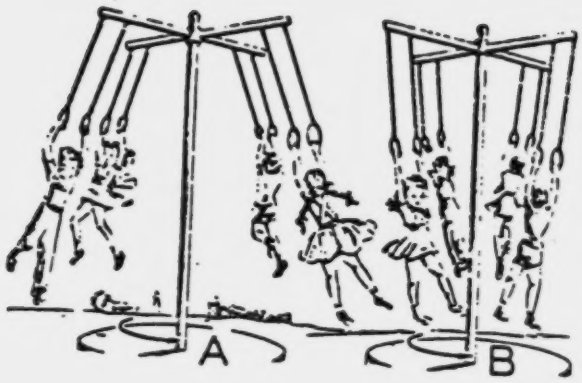
Który, z dwóch mężczyzn dźwiga cięższy ładunek? (nie ma różnicy, zaznaczyć C).



przykład y

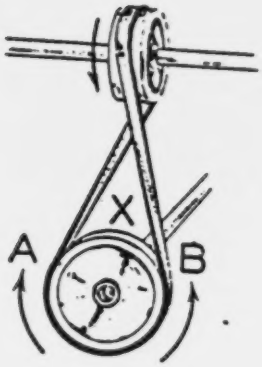
Który, z przedmiotów jest cięższy? (nie ma różnicy, zaznaczyć C)

Na następnych stronach znajdzie się więcej rysunków i pytań. Proszę każde pytanie przeczytać uważnie i uważnie przyjrzeć się poszczególnym rysunkom. Następnie zaznaczyć najlepszą (według was) odpowiedź na karcie odpowiedzi. Prosimy pamiętać, że każde pytanie ma 3 możliwe odpowiedzi. Macie 12 minut na zrobienie 25 kolejnych pytań jak najszybciej i jak najdokładniej jak to tylko możliwe. Jeśli nie jesteście pewni odpowiedzi zaznaczcie tą, która wydaje się wam najbliższa prawdy. Prosimy nic nie pisać na teście, tylko na karcie odpowiedzi.



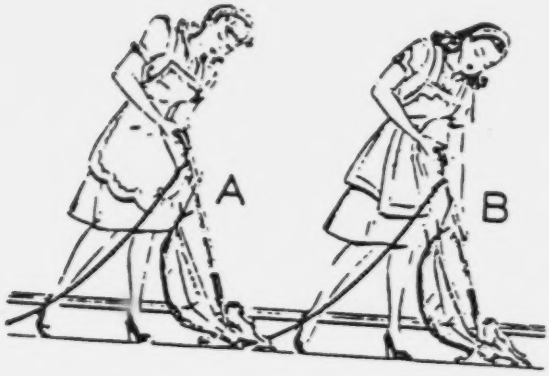
1.

Która, z grup dzieci huśta się dodatę najszybciej?
(Jeśli nie ma różnicy, zaznaczyć C)



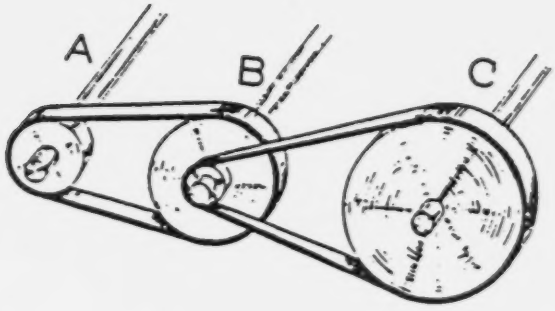
2.

Gdy górne koło (krążek) kręci się w kierunku wskazanym na rysunku, w ~~którym~~ jakim kierunku kręci się koło dolne? (Jeśli nie ma różnicy, zaznaczyć C)



3.

Która, z kobiet może łatwiej podnieść odkurzacz do góry?
(Nie ma różnicy, zaznaczyć C)



4.

Który, z wałków obraca się najwolniej?

MECHANICAL REASONING

ANSWER SHEET

NAME _____ DATE _____

Last First

1. A B C
2. A B C
3. A B C
4. A B C
5. A B C
6. A B C
7. A B C
8. A B C
9. A B C
10. A B C
11. A B C
12. A B C
13. A B C
14. A B C
15. A B C
16. A B C
17. A B C
18. A B C
19. A B C
20. A B C
21. A B C
22. A B C
23. A B C
24. A B C
25. A B C

TEST SCORES

LPI

CLOZE

MATH

MECH. APT.

Date _____

STUDENT PROFILE

Last name ---------- First ---------- Middle ----------

Home address ---------- City ---------- Zip ----------

Phone ---------- Social security number ---------- Alien registration number ----------

Nationality ---------- Native language(s) ----------

Date of birth ---------- Sex ---------- Arrival date in U.S./Arrival in Chicago

JOBS IN THE UNITED STATES

Company	Address	Dates Start/End	Job duties	Pay	Reasons for leaving
----------	----------	----------	----------	-----	----------
----------	----------	----------	----------	-----	----------
----------	----------	----------	----------	-----	----------

JOBS OUTSIDE OF THE UNITED STATES

Company	Dates Start/End	Job duties
----------	----------	----------
----------	----------	----------

EDUCATION IN THE UNITED STATES

School	Dates attended Start/End	Main subject(s)	Last level completed
----------	----------	----------	----------
----------	----------	----------	----------
----------	----------	----------	----------

EDUCATION OUTSIDE OF THE UNITED STATES

School	Country	Dates Start/End	Main subjects	Last level comp.
----------	----------	----------	----------	----------
----------	----------	----------	----------	----------
----------	----------	----------	----------	----------

HEALTH

Can you work standing up for a long time? ----------

Can you work sitting down for a long time? ----------

Can you lift heavy objects without back problems? ----------

Do you have any health problems or special circumstances? ----------

---

Person to be notified in case of an emergency: ----------
Name

Phone

or

Name

Phone

COMENTARIO PERSONAL

Nombre _____ Fecha _____

Por favor escriba, en media pagina, cuales son sus metas personales y porque está interesado en este programa de entrenamiento vocacional.

BEST Project

Zainteresowania osobiste

---------- ----------

Imię i nazwisko Data

Prosimy napisać pół strony w języku ojczystym o swoich celach życiowych idlaczego jesteś zainteresowany(na), w tym programie,o charakterze zawodowym.

BEST Project

Assessment Interview

Name:_____ Registration No:_____

Age:_____ Date:_____

Interviewer:_____

INTEREST:

1. Why are you interested in this program?

   A. Why a technical field?

   B. Why heating and air conditioning?

2. Do you want to take a full time job in this field when you finish the program?

3. What would you like to be doing 2 years from now?

Interest Rating Scale:

How high is the interviewee's overall interest? (Circle one)

Very high High Average Low

Comments:

MOTIVATION:

4. If you were accepted to this program, what would you do to be a successful (good) student?

5. What would you do if you had trouble understanding the teacher/ materials?

6. What would you do if you had problems coming to class?

(e.g.) a) transportation

b) family problems:

c) job offers:

7. What would you do if you didn't like the program?

(e.g.)a)teachers:

b)conditions in the classroom:

c)other students:

d)materials:

Motivation Rating Scale:

How high is the interviewee's overall motivation? (Circle one)

Very high High Average Low

Comments:

SUCCESS:

8. How much do you expect to earn at your first job as a helper in the air conditioning/heating field?

9. How are you going to pay for living expenses for you (and your family) while participating in this program?

10. How do the people in your family feel about your participating in this program?

11. When do you plan to return to your country?

12. When was the last time you attended any kind of school?

13. What other occupations are you interested in?

14. What type of transportation will you use to come to Oakton Community College?

15. Will you finish the program if you are accepted? Will you cooperate with us in helping you find a job after you finish the program?

Success Rating Scale:

What is the interviewee's overall probability of succeeding in this program? (Circle one)

Very high High Average Low

After the interview thank the person for coming and interviewing and showing interest in our program.

Tell interviewee that our staff will now evaluate all the test scores and the results of this interwiew. Also tell him/her that we will contact the individual by_____to let him/her know if he/she has been accepted into the program. If accepted the classes will begin on_____.

Evaluation:

Results of Interview:

Interest:_____

Motivation:_____

Probability of Success:_____

Comments on test scores:

Should the interviewee be accepted to the program?

Yes_____ No_____ Possibly_____

How did you come to this conclusion?

PROJECT **BEST**

Building Energy Systems Technology
-Heating/Air Conditioning-
For Students of English as a Second Language

Oakton Community College
MONNACEP/BEST
1600 East Golf Road
Des Plaines, IL 60016

David Pankratz, Project Coordinator
Room 2671 Phone: 312/635-1884

Dear :

Congratulations! Someone from our office has already informed you that you have been accepted to the BEST Program. This letter makes it official—welcome to our program! Classes begin Monday, September 22 at 9:00 a.m. in room 1711.

On the basis of your ability and motivation, we think that you have a great chance to succeed in this program. You have shown us that you plan to work hard. We look forward to working with you and helping you in every way we can.

Sincerely,

David Pankratz
Project Coordinator
635-1884

DP/abm

G. Student Orientation

During the first week of training all students are provided with an orientation to the program. The orientation serves to familiarize students with the structure of the program and what is expected of them. Trainees receive materials which address training responsibilities and evaluation criteria (pp.40-42). A sample job description for a heating and air conditioning helper is also given participants to give them a better idea of what will be expected of them on the job (p.43). From the very beginning, special emphasis is given to lab safety. A thorough discussion of safe lab practices is supplemented by filmstrips and handouts. The safe use of basic hand tools is also addressed during the first week.

As a part of their orientation, students are given a tour of the college campus and are informed as to the use of all college facilities and services. A special tour of the library is conducted. Students are encouraged to refer to any of the program staff for questions which relate to the use of school facilities.

Project BEST

Responsibilities for Training

Trainees are expected:

1. To learn the basic job skills necessary to become a successful heating/air conditioning service assistant.
2. To learn the job-related English necessary for training and work.
3. To cooperate with the program job developer in finding and getting trainees a job after finishing the program.
4. To attend all classes regularly. A trainee will be dropped from the program if he/she has an unacceptable number of unexcused absences (see section on Attendance on "Evaluation Criteria" sheet).
5. To be on time for all classes and remain at school until classes are finished.
6. To handle program equipment, books, and materials with care and responsibility.
7. To treat all members of program—both staff and fellow students—in a fair and friendly way.

Our program will provide trainees with:

1. An orientation to the program.
2. Basic job skills training in heating/air conditioning (225 hours).
3. Classroom assistance from bilingual tutors.
4. Job-related English instruction (app. 175 hours).
5. Instruction in job-finding skills.
6. Assistance from job developer in actually finding a job.
7. Counseling for personal matters.
8. Our help and friendliness in dealing with each trainee's training, problems, and future goals.

Project BEST

EVALUATION CRITERIA

for BEST Students in Certificate Program

Students who successfully complete the BEST training program will receive a certificate of completion on the last day of class. Our staff will help those students with certificates in finding a job in the heating and air conditioning field.

To receive a certificate, you must meet certain requirements. You will be evaluated in the following three areas:

A)	your attendance	34%
B)	your class performance	33%
C)	test scores	33%
		100%

All three areas are very important. Each one is directly related to how much you are learning. We will talk to each of you on a regular basis about your progress in this program. If your progress is good, everyone is happy. If your progress is poor, we will talk to you about ways to improve. If students with serious problems do not improve, they will be dropped from the program.

Attendance

Your attendance will be looked at very closely. Remember, if you must be absent or late you should call our office at 635-1884 to let us know. We will report your call to the instructors. If you do not call, your absence is unexcused and will count heavily against you. If a student has three unexcused absences three days in a row, it is an automatic reason for dropping that student from the program.

When attendance is poor, learning suffers. If your attendance becomes so poor that you don't learn properly, we have a serious problem. At that point we will have to discuss the problem with you and give you a warning. If the warning doesn't improve the situation, you will be dropped from the program.

Class Performance

Your performance—in both English class and the lab—is very important. We expect you to:

1) have a friendly, productive attitude.
2) contribute to class discussions.
3) help other students when they need help.
4) do quality work.
5) turn in all lab reports and homework assignments on time.

This program will be a good one if every student believes in the importance of these things.

Test Scores

You will take tests throughout your training. Listen in class, read your book, and study hard and you will be successful when it is time to take a test.

What Employers Look For

What employers expect of you on the job is exactly what we expect of you at school. Employers in the job market look for dependable, cooperative, and knowledgeable workers.

Your attendance record	shows your	dependibility.
Your class performance	shows your	cooperativeness.
Your test scores	shows your	knowledge.

When employers ask about you, we tell them about your behavior. The best students will have a better chance to get the best jobs.

In conclusion, do your best and we will do our best to help you. This is a good program, but good students will make it better. Remember, learning is your responsibility.

Heating & Air Conditioning Technician Helper
Job description:

Assists workers who install, repair, service, or do maintenance on commercial or residential heating and air conditioning systems.

Job duties may include any or any combination of the following:

-Know the functions of and ideally be able to use basic refrigeration hand tools, power tools, instruments, and equipment.

-Cut, shape and solder sheet metal.

-Solder and/or silver braze copper fittings.

-Apply knowledge of basic electrical theory to the installation or repair of heating and air conditioning units.

-Pass electrical wire through conduits, splice wire and tape connections.

-Install components of prefabricated heating or cooling units.

-Install air and water filters in completed assemblies.

-Check cooling systems' operating pressures using gage manifold.

-Evacuate cooling systems under supervision.

-Charge cooling systems under supervision.

-Clean components of heating and cooling systems.

-Refer to service manuals for instruction on installation and repair work.

-Otherwise assist skilled technician by transporting equipment, running errands, or obtaining necessary information to complete an assignment.

Note: Upon consulting with several employers in the heating and air conditioning field, it was determined that job descriptions rarely exist for helpers. It is generally agreed that the more skills an applicant has, the greater the chance for employment in an entry-level position. Most employers stress the importance of good communication skills and reliability over technical skills per se.

September, 1986 Project BEST, Oakton Community College

H. Descriptions of VESL and Vocational Components of Training

VESL

The vocational English as a Second Language component focuses on job-related English specific to the vocational field. Job-related English is seen as consisting of two basic types: the specific technical language and vocabulary needed for training and work, and the more general job-related English necessary to obtain a job and to interact successfully with supervisors, co-workers, and customers in a service field. Communication skills necessary for day-to-day living in the United States, often termed survival skills, are taught at the discrepancy of the VESL instructor based on the deficiencies the group or individual trainees may have.

Vocational Heating,Refrigeration and Air Conditioning

The vocational component is designed to teach the heating, refrigeration, and air conditioning competencies considered most important to obtaining entry level jobs in the field. Priorities are developed and modified jointly by the vocational instructor, the project director, and the job developer on the basis of input from employers. Lecture, discussion, and lab work are integral components of the course, whereby most time is devoted to actual hands-on lab projects. Because two language groups participate simultaneously in the course, the initial instruction is conducted in basic English. One bilingual tutor for each language is present to review important material and assist trainees in their learning and lab work in the native language.

I. Coordination of VESL and Vocational Components

Joint lesson planning between the English instructor and the vocational instructor is certainly one of the most crucial aspects of a successful curriculum in a BVT program. Instructors in this program meet daily, and all staff members meet at least once weekly to insure coordination of learning activities and goals.

Along with teaching the VESL component, the VESL instructor is actually present in the vocational lab for an average of one hour every day. Attending the vocational course daily has been made part of the VESL instructor's job description, and the instructor is thus paid for this time. This arrangement provides the best guarantee that the VESL lessons relate directly to the objectives of the vocational training. As a general rule, the topic being handled in the vocational course serves as the guideline for the technical English component of the VESL class. In this sense it is crucial that the VESL instructor know exactly what the vocational instructor has planned for that day, the week, etc. in order to plan the English lessons accordingly, especially those which related directly to the vocational component.

The VESL instructor receives input on lesson planning not only from the vocational instructor, but from the tutors and the trainees also. As the program progresses, it is hoped that potential employers will have an increased influence on further development of the VESL curriculum.

J. Job Development

The job developer works in conjunction with the project coordinator to provide program participants with opportunities for either employment of further training. The job developer's primary responsibility is to contact potential employers and work together with them in an effort to fill job openings for helpers in the heating and air conditioning field. For job placement purposes the job developer and the project coordinator have written an "Employer's Guide", a brochure intended to inform employers about how they can work with Project BEST (pp.47-48). The job developer attempts to match program participants with jobs best suited for them, which means that he/she must get to know the background and interests of each trainee (p.49). Often this means making contact with employers in a related field, such as building maintenance. The job developer makes referrals, arranges job interviews for trainees (pp.50-51), and offers trainees general ongoing assistance in finding work, changing jobs, or receiving a promotion.

It is also the responsibility of the job developer to maintain status reports on trainee and graduates. Program participants' work status is recorded at regular intervals following program completion (pp.52-56).

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For more information contact

PROJECT BEST
at
OAKTON COMMUNITY COLLEGE

David Pankratz, Coordinator
312/635-1884

Oakton Community College
MONNACEP/BEST
1600 East Golf Road
Des Plaines, Illinois 60016

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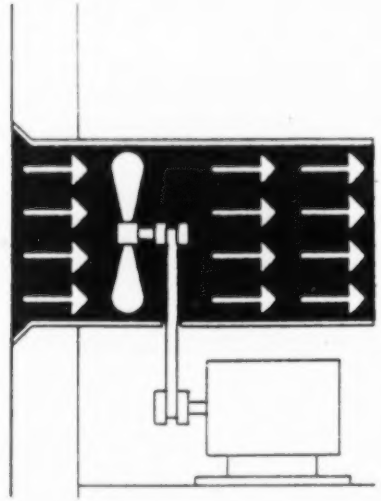
OAKTON COMMUNITY COLLEGE
MONNACEP/BEST
1600 East Golf Road
Des Plaines, IL

EMPLOYER'S GUIDE

How We Can Assist
Your Company in Finding
Potential Employees

PROJECT BEST

Bilingual Vocational Training Program
in
Heating/Air Conditioning Refrigeration



PROJECT BEST
Building Energy Systems Technology
(312) 635-1884

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Are you looking for reliable workers with basic training in Heating/AC/Refrigeration?

Oakton Community College and the U.S. Department of Education have developed a program for English as a Second Language adults to prepare them for entry-level jobs in your field.

Project BEST is a bilingual vocational training program which gives trainees both practical skills and job-related English. Trainees undergo 15 weeks of rigorous instruction, including much hands-on experience in Oakton's Heating/AC laboratory.

Courses include:

- Use of Tools, Instruments, and Safe Work Practices
- Basic Electricity 1&2
- Basic Refrigeration 1&2
- Introduction to Gas Heating
- Introduction to Air Conditioning
- Job-related English

Total

Vocational instruction:	225 Hours
English instruction:	175 Hours

How can you as an employer benefit?

Project BEST offers prospective employers an opportunity to find the right applicant for a specific job with a minimum of trouble. Our trainees are prescreened, dedicated to hard work, and can start immediately upon completion of training.

We at Project BEST can:

- Provide trained applicants at no cost to you
- Follow up on employees' performance and thereby enhance employer/employee relations
- Give you the opportunity to work together with Oakton Community College in providing an important community service.

Can you help us?

Yes, by giving us advice on how to adjust our program to better meet your needs. Any suggestions you could make would be appreciated.

Project BEST Course Competencies

Our program is structured to give each trainee experience with specific job-related tasks. Program graduates are expected to know:

SAFETY

- Use basic tools, instruments, and equipment properly and safely

AC/REFRIGERATION

- Clean condensors
- Check systems operating pressures using gage manifold
- Evacuate systems (vacuum) under supervision
- Charge systems under supervision
- Install new condensor equipment and make piping hookups

HEATING

- Identify components of forced air heating systems
- Clean forced air furnaces
- Check line pressures for gas, etc., under supervision
- Wire forced air furnaces under supervision
- Install piping and tubing assemblies

SERVICE

- Use service manuals
- Refer to proper source to obtain needed information
- Deal with customers, co-workers and employers in a helpful and friendly manner

Project BEST
Trainee
Profile

Name	SS #	Status	Native Country	Job Experience Native Country	Job Experience USA	Education	Remarks
Salvador		Citizen	El Salvador	Auto mechanic, 7 yrs.; owned a furniture co. for 12 yrs.	Janitorial service worker; house cleaner; assembly line worker.	Grammar school in El Salvador.	Experienced auto mechanic, working knowledge in carpentry and auto electrical systems. 13 yrs. in the USA.
Jose		Citizen	Mexico	Student	Factory worker; food service worker; supermarket worker.	High school in USA.	Has own transportation and would like to work in the N.W. suburbs. 10 yrs. in the USA.
Vlodek		Permanent Resident	Poland	Teacher/coach 5 yrs.	Construction worker, 3 yrs.; truck driver, 3 yrs.	College educated in Poland.	Has a class C drivers license. Experienced stucco worker, will work where job is available. 4 yrs. in the USA.
Janusz		Permanent Resident	Poland	Plumber and welder for 6 yrs.	New arrival.	Polish technical school for plumbing; English course in USA.	Experienced pipe fitter and steam heater installer. Will work where job is available. 1 yr. in the USA.
Leonard		Citizen	Poland	Factory supervisor, 6 yrs.; Assembly line worker, 6 yrs.;	Maintenance service, 2 yrs.; machine opera-	Polish technical college, B.S., Practical Mechan-	Has experience as a plumber and electrical worker. 7 yrs. in the USA.

Project BEST

JOB BANK FORM

Date received: _____

Name of company: _____

Address: _____

_____

Phone: _____

Contact person: _____

Type of contact:

Phone: _____
Letter: _____
In person: _____
Other:

Position: _____

Duties: _____

_____

Work location: _____

Language requirements: _____

Other requirements: _____
(tools, dr. lic., etc.)

Hours: _____

Salary: _____

Fringe benefits: _____

When to apply: _____

How to apply: _____

Comments: _____

_____

Project BEST

Job Interview Follow Up

Name of Trainee _____ Company _____

Date of Interview _____ Interviewer _____

Phone _____

Trainee's Comments:

Interviewer's Comments:

Results: Job _____ No Job _____

Comments:

Name of Trainee _____ Company _____

Date of Interview _____ Interviewer _____

Phone _____

Trainee's Comments:

Interviewer's Comments:

Results: Job _____ No Job _____

Comments:

PROJECT **BEST**

Building Energy Systems Technology
-Heating/Air Conditioning-
For Students of English as a Second Language

Oakton Community College
MONNACEP/BEST
1600 East Golf Road
Des Plaines, IL 60016

David Pankratz, Project Coordinator
Room 2671 Phone: 312/635-1884

Dear

Greetings from Project BEST! We hope you are doing well. Our program is still going on. On March 2 we began a new cycle with 15 eager students.

We have tried to help you improve your job opportunities, and would like to continue helping you if we can.

It will be very helpful to us if you can give us some information about your work situation. We need this information to help you and to be able to continue our program for new students.

If you are looking for a job, please fill out Form A. If you have a job, please fill out Form B. Send the form you have completed back to us in the MONNACEP envelope.

Thank you, and please stay in touch! We would like to know how you're doing!

Sincerely,

David Pankratz
Project Coordinator
635-1884 or 635-1987

Project BEST

Form A

Student Status Survey

Please fill out this form if you are looking for a job now. Answer the items below. Send the information to us in the enclosed envelope.

Your name: _____ Today's date: _____

Address: _____

Phone: _____

Are you actively looking for a job now? _____

How long have you been looking for a job? _____

What type of job are you looking for? _____

Have you had any interviews for jobs? _____

If so, at what companies?

	(1)	(2)	(3)
Company name:			
Phone no.			
Type of job:			
Person who interviewed you:			
Interview date:			
Why do you think you didn't get the job?			
Did you call back after the interview?			

Are you taking any classes at a school now? What classes? _____

Did Project BEST help you in any way? _____

_____

How can Project BEST help you in the future? _____

How could we change our program to make it easier for students to get jobs? _____

_____

Thank you for helping us improve our program. Call us anytime at 635-1884.

Project BEST

Form B

Student Status Survey

Please fill out this form only if you now have a job. Answer the items below. Send the information to us in the enclosed envelope.

Your name: _____ Today's date: _____

Address: _____

Phone: _____

Company where you are working:

Name: _____

Address: _____

Phone: _____

Supervisor's name: _____

When did you start working? _____ Hours/week _____

How did you find the job? _____

What do you do in your job? _____

_____

Are you satisfied with your job? _____

How long do you want to stay at this job? _____

How much do you earn per hour? _____

Did Project BEST help you in any way to get the job? If so, how? (If you already had this job before you came into our program, did Project BEST help you in any way to keep the job or get a promotion? How?) _____

_____

Is there anything else you want to tell us about your work situation? _____

_____

How can we help in the future? _____

_____

How can we change our program to make it easier for students to get jobs? _____

Thank you for helping us improve our program. Call us anytime at 635-1884.

Project BEST

Graduates Status Report

Cycle: _____

Graduation DATE: _____

NAME	DATE	15 days	30 days	60 days	90 days	Remarks/(180 days)

55

61

62

Project BEST

Status Report on Recruitment and Placement

Recruitment, Retention

	Spring 1986 Cycle	Fall 1986 Cycle	Spring 1987 Cycle
Recruited			
Screened			
Accepted			
Attended 1st day			
Attended 2nd week			
Graduated			

Placement

Graduated	
Interviewed for job	
Offered job	
Offered job but refused	
Working in HVAC*	
Working in related occupation	
Enrolled in related schooling/training	
Total no. placed	
Promoted in present job	
Unemployed upon entering program	
Unemployed upon graduation	
Currently unemployed	

* Heating, Ventilation, and Air Conditioning

K. Counseling Services

The counselor for the program serves as personal, academic, and career advisor for trainees. He/she acts as the trainees' advocate and facilitator. The counselor confers with individual trainees in a confidential setting at regular intervals. Trainees are encouraged to discuss problems of any nature, including family or financial concerns, with the counselor.

During the last four weeks of the training program the counselor and the VESL instructor work as a team to teach job finding skills. Resumes are compiled, mock interviews are conducted, and all strategies which relate to locating job opportunities and marketing one's personal assets are discussed and practiced.

The project counselor attempts to remain in contact with trainees after they complete training to offer ongoing advice, assistance, and encouragement.

L. Evaluation

Trainees are evaluated on their overall progress in the program on the basis of the evaluation criteria discussed with them during orientation (pp.39-42). No grades per se are given in the program. As much as possible, emphasis is placed on steady, overall progress and the students' desire to improve as opposed to quantifiable ratings. Because the instructional objective is to teach vocational and language competencies, the instructors focus on determining whether or not trainees have mastered those competencies in evaluating their classroom performance and constructing tests. "Tests" are either oral, written, or call for student demonstration of particular competencies.

At regular four-week intervals instructors are asked to submit a Trainee Progress Assessment form (p.59) to the project coordinator, job developer and the counselor. In this way trainees can be provided with feedback about their performance from a variety of staff personnel.

Students who successfully complete training receive a certificate of completion and a letter of recommendation (pp.60-61.

At the end of the program, trainees are also given the opportunity to give a "formal" written evaluation of the training they have received (pp.62-65). This process insures their anonymity.

Project BEST
Fall 1986

TRAINEE PROGRESS ASSESSMENT
Instructional Weeks 1-4

Subject:
Instructor:

Name of Trainee	Atten-dance(%)	Test/Quiz Scores	Class Performance	Other Criteria/Comments	Overall Progress G-Good S-Satisfactory NI-Needs Improveme U-Unacceptable
59					
66					67

MONNACEP

MAINE-OAKTON-NILES-NORTHFIELD ADULT & CONTINUING EDUCATION PROGRAM

hereby certifies that

Francisco Villa

has successfully completed the

Project BEST Bilingual Vocational Training Program
in
Heating/Air Conditioning
for Students of English as a Second Language

Oakton Community College
Des Plaines, Illinois

David L Parkinson
Program Director

6-18-1987
Date

Chad Langer
Vocational Instructor

Barbara J. Hermann
English Instructor

PROJECT **BEST**

Building Energy Systems Technology
-Heating/Air Conditioning-
For Students of English as a Second Language

Oakton Community College
MONNACEP/BEST
1600 East Golf Road
Des Plaines, IL 60016

David Pankratz, Project Coordinator
Room 2671 Phone: 312/635-1884

Letter of Recommendation

for

Project BEST Graduate

Ms. Elizabeth _____ received a certificate of completion for her successful participation in Oakton Community College's special heating, refrigeration and air conditioning program. She attended class Monday through Friday, 6 hours each day, for approximately 4 months.

Elizabeth took hands-on courses in the following areas in Oakton's HVAC lab:

Lab Safety
Basic Electricity
Basic Refrigeration Cycle
Soldering and Brazing Techniques
Introduction to Air Conditioning
Introduction to Gas Heating

She also worked very hard to improve her spoken English, and participated in intensive English classes daily.

Elizabeth was one of the most motivated and aggressive learners in our program. She has a great desire to improve her career opportunities, and is working very hard to meet this goal. Her former experience in the roofing business has provided her with a lot of "smarts" about both the business end and the technical end of a service industry. It is my feeling that Elizabeth will make a strong employee of any company she chooses to work for.

Sincerely,

David Pankratz
Program Director

January, 1987

For any additional information regarding Ms. 's performance in this program, please call us anytime at 635-1884.

Project BEST

Trainee Program Evaluation

How much did you benefit from the BEST Program? Please help us improve our program for the next cycle by answering the questions below (mark your answers with an "X" in the box).

	Very Much	Much	Some	Not Much	Only a Little	Please write your comments here.
1. Did this program help you learn about soldering/brazing?						
2. Did this program help you learn about electricity?						
3. Did this program help you learn about window air conditioning service?						
4. Did this program help you learn about refrigeration?						
5. Did this program help you learn about heating?						

Project BEST Evaluation

	Very Much	Much	Some	Not Much	Only a Little	Please write your comments here.
6. Did this program help you improve your spoken English?						
7. Did this program help you improve your English grammer?						
8. Did this program help you improve your technical English?						
9. Did this program increase your interest in learning English?						
10. Did this program help you learn about how to find a job in the U.S.?						
11. Did this program help you learn how to talk to supervisors and co-workers?						
12. Did this program help you learn how to keep a job in the U.S.?						
13. Did this program help give you ideas about your future work plans?						

Project BEST Evaluation

	Very Much	Much	Some	Not Much	Only a Little	Please write your comments here.
14. Is the book "Modern Refrigeration and Air Conditioning" a good book for this program?						
15. Do you like the lab manual for this program?						
16. Did the Carrier slide shows help you learn about heating?						
17. Did the tapes that you took home help you learn?						
18. Did you get help from the project director and the counselors with your personal interests and problems?						
19. Did the tutors help you learn in the lab?						
20. Did you work as hard as possible in this program?						

Project BEST

Evaluation (cont.)

What things did you like most about the program?

What things didn't you like about the program? (What could be improved?)

What would you change in the program for the next group of students?

Will your life in the U.S. be easier/better because you finished this program? Why?

II.

CURRICULUM OVERVIEW

A. Curriculum Goals

The purpose of the Project Best bilingual vocational training program is to prepare trainees with the basic linguistic and vocational skills they need to obtain entry level jobs (generally as assistants) in the residential heating/air conditioning field or a related field. The program is designed to help trainees attain their goal of becoming employed, as well as provide them with skills which increase their overall ability to develop productive careers. Accordingly, the Project BEST curriculum is intended to meet the needs of the students and the demands made on them at the workplace. For this reason the curriculum may never be static: it requires continual modification as the program grows and the project staff improves its understanding of the relationship between limited English proficient adults and the job market.

The Project BEST curriculum is divided into three parts: vocational heating/air conditioning, vocational English as a Second Language, and a "job skills marketing" component. This last component is intended to teach trainees how to both find a job and retain it. This component is taught jointly by the VESL instructor and the project counselor during the last four weeks of each training cycle.

B. Curriculum Modification

The curriculum is, and must be, in a continual state of modification in order to meet the changing demands of the program. This fact alone has made it difficult to present a curriculum which represents what the program is actually teaching at any one point in time. As such, the reader should interpret the sections that follow as guidelines for this particular BVT program and not as a "finished" product.

Changes to the curriculum are made through a process which involves all staff members. The project coordinator, job developer, counselor, instructors and bilingual tutors meet at least bi-weekly to discuss potential improvements in the curriculum. The vocational instructor and the VESL instructor meet daily in the lab to insure coordination between those two components, a situation which frequently results in modifications in either teaching style, instructional techniques or even in content.

The most valuable source for information on which to base curriculum modifications is the actual workplace. Visits to worksites

and feedback from both employers and employees provides the best input as to which skills--both language skills and vocational skills--are the most important. In our program the project coordinator and the job developer have the most contact to employers, and thus can provide the program with the greatest input. The program plans to investigate ways which will enable instructors to establish direct contact with employers as well. Several area employers are members of the Project BEST Advisory Committee, and they are very helpful in expressing their ideas regarding what they feel should be priorities in training and what future trends they foresee in the vocational field. Feedback from former trainees who have obtained employment in the heating/AC field is also extremely helpful in planning program changes. Their statements concerning which parts of training they have found most valuable and what components they feel should be added are taken very seriously.

C. Rational for Competency-based Curriculum

Project BEST uses a competency-based curriculum. Each major subject area is divided into "demonstrable skills" which are to be learned and then demonstrated by trainees. This competency-based approach is thought to be most practical and successful because it allows for a relatively non-academic, hands-on type of training suitable to the vocational field.

A competency-based curriculum allows instructors to make an ongoing assessment of each trainee's progress. Once a competency has been demonstrated, a trainee is allowed to proceed to more difficult tasks at his/her own pace. The "compartmentalization" of skills also provides students with a sense of steady progress as they master pieces of what will eventually become a whole block of expertise.

D. Instructional Format and Techniques

Instructors use teaching techniques designed to facilitate the learning of competencies, take individual learning styles into consideration, and provide variation.

VESL

In the VESL component of the program, instruction emphasizes oral production of the structures and phrases necessary for training and work in the heating/AC field. Language items are modeled by the instructor and then practiced and "performed" by the students. Exercises include oral repetition, pair practice, role playing, presenting dialogues to the

class, and occasionally written exercises or quizzes. Students who have mastered a competency are assigned either more difficult tasks related to that competency or work which addresses new ones. The Project BEST VESL competency list serves as the framework for instruction. The VESL teacher uses self-developed materials as teaching aids and draws on several VESL textbooks (see section on bibliographical materials) for related materials. The text relied on most heavily for working with the generic VESL competencies is Speaking Up at Work; each student has a copy of this textbook.

For the technical reading and vocabulary, the VESL instructor refers to the vocational instructor, the Project BEST lab manual, and heating/AC texts used in the program. One exercise very valuable to students is reading technical passages and then discussing the difficult structures, vocabulary and content as a group. During these exercises questions sometimes arise which cannot be answered by the VESL instructor, but require the assistance of the vocational instructor. This is one of the primary reasons why so much cooperation and coordination between instructors is necessary.

Vocational Lab

In the vocational component of the program time is divided between lecture and demonstration, discussion, and actual hands-on lab work. The first three activities comprise approximately one-third of lab time, and are devoted primarily to giving trainees the information they need in order to proceed with lab exercises safely and successfully. Bilingual tutors discuss difficult concepts with trainees in the native

language whenever necessary, with the vocational instructor providing frequent opportunities for their interaction.

During actual hands-on lab work both the instructor and the tutors circulate in order to insure that trainees are performing their assigned tasks properly. Trainees are assigned tasks according to their own level of confidence, expertise, and availability of equipment. Trainees normally work in groups on lab projects. Although English is encouraged, trainees often use their native languages when speaking among themselves. The instructor attempts to mix Spanish and Polish students to maximize the role of English in classroom communication.

Trainees' progress in the vocational lab is evaluated on the basis of their demonstrated ability to perform specific lab tasks, i.e., demonstrate competencies. Written study questions accompany each lab exercise. These, as well as selected reading passages from textbooks are normally assigned as homework and then discussed in class. Although the project staff was initially somewhat hesitant to give written quizzes in lab, trainees often expressed their wish for greater use of quizzes to provide feedback.

A more in-depth look at the competencies in each component of training follows.

Vocational Competencies

Just as the English instructor focuses on the teaching of practical communication skills, the vocational instructor's goal is to teach the basic skills necessary for procuring a job as a helper in the heating and air conditioning field. The focus is on developing competencies --teaching the students how to actually perform certain tasks. Theory is taught only to the extent necessary to successfully perform those tasks. Thus, the amount of theory presented will depend on the particular task at hand. The link between theory and practical tasks should be as close as possible.

In our program, two topics are emphasized during the first week of instruction: safety and the proper use of basic tools. The following two weeks focus on soldering and silver brazing techniques as they apply to installation and service work. Next, the basic concepts of electricity as they apply to heating and cooling systems are taught. A study of the refrigeration cycle and related practical tasks follow. Air cooling systems are the next topic, with an emphasis on window air conditioning units. Finally, the principles and maintenance procedures for forced air furnaces are handled. Throughout the program, residential as opposed to commercial heating and cooling systems are stressed.

The Project BEST laboratory manual was authored by Allen Gandy from Kalamazoo Valley Community College, Kalamazoo, Michigan; the language was simplified by the Project BEST staff in order to make it more accessible to limited English proficient adults. The lab manual is composed of distinct modules which serve as the basis for practical lab tasks.

These "labs" were designed to impart some of the basic knowledge and practical skills advantageous to anyone seeking entry-level employment in the heating and air conditioning field.

Following is a list of the specific vocational competencies based on the tasks in the lab manual (pp.74-75). These represent individual bits of skill and knowledge. When integrated into a curriculum which attempts to synthesize these bits into units, and in addition stresses work safety, efficiency and improving verbal communication, the result should be a program which provides trainees marketable job skills.

In addition to the vocational competency list, the following pages include the table of contents and sample instructional materials from the Project BEST lab manual (pp.76-81). Also included are sample bilingual vocabulary sheets (pp.82-85).

Vocational Competencies for Project BEST Bilingual Vocational Training

Heating, Refrigeration, and Air Conditioning

A. Soldering and Brazing Tubing

1a. Form various tube and fitting connections using soft soldering.
1b. Form various tube and fitting connections using silver brazing.

B. Measuring Resistance, Voltage and Current

2. Measure resistance using a volt ohm meter (vom).
3. Measure voltage in an electrical circuit using a vom.
4. Measure current in an electrical circuit using an ammeter.

C. Applying Electrical Theory To Circuits

5. Calculate values for current, resistance and voltage.
6. Build a series circuit and measure the resistance, voltage and current values in the circuit.
7. Build a parallel circuit and measure the resistance, voltage, and current values in the circuit.
8. Build a combination circuit, and measure the resistance, voltage, and current values in the circuit.
9. Wire a 120 volt branch circuit.
10. Test electrical components and identify defective components.

D. Using Gages

11. Use pressure and vacuum gages to determine the pressure of the refrigerant system.

E. Checking and Servicing Refrigeration Systems and Controls

12. Locate repair and specification information using a manufacturer's service manual.
13. Test refrigerant system for non-condensables.
14. Evacuate a refrigeration system.
15. Charge a refrigeration system.
16. Check refrigerant charge in refrigeration system for temperature and suction pressure.
17. Transfer refrigerants from one cylinder to another.
18. Locate and repair leaks in a refrigeration system.
19. Replace filter-driers.
20. Correct restrictions in capillary tubes.
21. Check and/or replace a compressor overload.
22. Check operation of compressors with service valves.
23. Test a compressor for electrical and mechanical functions.
24. Replace a hermetic compressor.
25. Remove and install an evaporator.
26. Locate and repair leaks in an evaporator.

E. Checking and Servicing Refrigeration Systems and Controls (cont'd)

27. Check and service air-cooled condensers.
28. Install and adjust a thermostat according to manufacturer's specifications.
29. Identify and record defects of a refrigeration system.
30. Replace solenoid valves.
31. Check and replace current relays.

F. Replacing & Adjusting Heating Devices

32. Install and/or replace a furnace fan limit switch.
33. Adjust the fan/limit controls according to predetermined settings.
34. Light pilot and adjust burner.

OAKTON COMMUNITY COLLEGE

Project BEST

Heating/Air Conditioning/Refrigeration

Lab Manual

Lab No.	Title	App. Hrs.	Task Completed Student Sign-off Date	Instructor Sign-off
1	Soft Soldering	12		
2	Brazing Joints	12		
3	Measuring Resistance	5		
4	Measuring Voltage	5		
5	Measuring Current	5		
6	Applying Basic Electrical Theory	5		
7	Working With Series Circuits	5		
8	Working With Parallel Circuits	5		
9	Working With Combination Circuits	5		
10	Checking Electrical Wiring	6		
11	Using Electrical Servicing Equipment	6		
12	Troubleshooting Electrical Circuits	12		
13	Using Pressure and Vacuum Gages	7		
14	Using Service Manuals	4		
15	Testing for Noncondensable Gases	5		
16	Evacuating A Refrigeration System	11		
17	Charging A Refrigeration System	5		
18	Checking Refrigerant	7		
19	Transferring Refrigerants	4		
20	Repairing Leaks in a Refrigeration System	8		
21	Replacing Filter-Driers	4		
22	Correcting Restrictions in Capillary Tubes	5		
23	Checking Capacitors	5		
24	Checking and/or Replacing Compressor Overload	5		

Lab No.	Title	App. Hrs.	Task Completed Student Sign-off Date	Instructor Sign-off
25	Checking Operations of Compressors with Service Valves	4		
26	Testing Compressors	6		
27	Cleanup After Burnout	12		
28	Replacing A Hermetic Compressor	8		
29	Installing Evaporators	4		
30	Repairing Leaks in Evaporators	5		
31	Checking and Servicing Air-Cooled Condensers	4		
32	Replacing Thermostat	5		
33	Checking Defrost, Mullion, and Drain Heaters for Continuity	8		
34	Replacing Defrost Heater	5		
35	Checking Defrost Thermostat	4		
36	Checking And Replacing Defrost Timer	5		
37	Troubleshooting A Refrigerant System	12		
38	Repairing or Replacing Solenoid Valves	5		
39	Checking And Replacing Current Relays	4		
40	Adjusting And Replacing Low Pressure Controls	5		
41	Adjusting And/Or Replacing High Pressure Controls	5		
42	Adjusting Thermostatic Expansion Valves	5		
43	Replacing And Adjusting Limit Switch	4		
44	Adjusting Fan/Limit Controls	4		
45	Lighting And Adjusting Pilot	4		
46	Adjusting Gas Burners	4		
47	Adjusting Gas Regulator Valves	6		
* 48	Determining The Size and Location of Duct Systems	20		

* Optional

LAB #1

SOFT SOLDERING

Soldering is a method of joining or bonding two pieces of metal together. This is done by melting and flowing another metal or combination of metals with a lower melting temperature between the other two piecess. In soft soldering, the solder is usually made of fifty percent lead and fifty percent tin. Sometimes it consists of ninetyfive percent tin and five percent antimony. In air conditioning and refrigeration servicing, the student often will need to join or repair tubing and other metals by this method. In this lesson the student will learn to join (sweat) copper fitting together using the soft solder method.

READINGS

1. Althouse, et all, MODERN REFRIGERATION AND AIR CONDITIONING, Paragraphs 2-20 through 2-24, 11-44, 11-82, 14-22.

2. TPC # 136 Paragraph 1.53.

3. Marsh, Olivo, PRINCIPLES OF REFRIGERATION, :age 235 and 236

OBJECTIVE

Using copper tubing, soft solder, soldering flux, a flux brush, sand cloth, a soldering torch, and a swaging kit, the student will form a SWAGE connection and a T connection and solder the connection. The finished connection must withstand pressure up to 100 PSI.

LAB ONE

SOFT SOLDERING

MATERIALS: Lengths of assorted sizes of copper tubing
A spool of 50/50 soft solder
Solder flux

TOOLS: Torch
Tube cutter
Spark igniter
Flux brush
Tube cleaning brush
Sand paper
Electric drill and bits
Safety goggles

TIME: 11 hours

PROCEDURES:

1. Prepare the assembly as shown in Fig 2-29 of MODERN REFRIGERATION AND AIR CONDITIONING.

2. Before you begin soldering, clean the ends of the tubing thoroughly with sand paper and tube cleaning brush.

3. Apply flux to the male end, but leave 1/16 inch at the end with no flux. This way no solder will flow into the tubing.

4. Join the pieces by heating the tubing and touching the solder wire to the joint. Allow the heat of the tubing to melt the solder. Do not heat the solder wire with the torch flame. Soldered connections must be made in various positions (inverted, horizontal, etc.) When you have reached the proper temperature, the flux will start to smoke and the solder will flow around the connection. If the copper is too hot the solder will run down the tube.

5. Using the electric drill and a larger diameter of copper tubing (3/4 inch), drill a hole in the side of the tube the appropriate size for a 1/4 inch tube. Place the 1/4 inch tube on (not into) the side of the 3/4 inch tube to make a "T" connection. In this case the strength of the connection must come from a bead of solder that is placed around the 1/4 inch copper tube. This type of connection will be used to attach various pressure controls and other devices to a system.

6. Have your instructor check your work. You must be able to consistantly make neat and well constructed connections.

7. Clean your work station and return all tools and materials to their proper places before you check out of this lab.

LAB ONE

SOFT SOLDERING

STUDY QUESTIONS:

ANSWER TRUE OR FALSE

1. Safety glasses should always be worn when soldering? TRUE

2. 50/50 solder is recommended for high temperature applications. FALSE

3. 95/5 solder may be used in some systems where operating temperatures vary from 200 degrees F to 350 degrees F. TRUE

4. It is not necessary for the surfaces to be joined or bonded to fit well together. FALSE

5. If the surfaces to be joined are not clean, the flux will clean it well enough. FALSE

6. If you can leave the flux on the joint, the joint will last longer. FALSE

7. You should make all swege joints slightly larger than necessary so more solder can be applied to the joint. FALSE

8. It is not possible to flow enough solder into the joint to completely block the pipe. FALSE

9. In all very high temperature (300 degrees F to 350 degrees F) and very low temperature (-20 degrees F to -50 degrees F) systems, soft solder (50/50 or 95/5) should not be used? TRUE

10. The appearance of the joint is not important. FALSE

Working emps.

BEST Vocabulary (Polish)
Labs 21-31

Refrigeration
Labs 21-22

(nouns)
drier - suszarka
filter - filtr
filter-drier - filtr suszący
replacement - wymiana
arrow - strzałą, strzałka
orifice - otwór, kryza
moisture - wilgoć
expansion valve - zawór rozprężający
capillary tube - rurka włoskowata
strainer - filtr, sito
restriction - restrykcja
inlet - wlot
outlet - wylot

(verbs)
check - sprawdzać, kontrolować
replace - wymieniać, wkładać na miejsce
install - instalować
dissolve - rozpuszczać (się)
corrode - korodować, rdzewieć
equalize (pressure) - wyrownywać
crimp - fałdować, karbować

(adjectives/adverbs)
absorbent - substancja absorbująca
clogged - zatkany
corroded - skorodowany
soaked - namoczony, nasiąknięty
swaged - zgrubiony

Lab 23

capacitor - kondensator
start capacitor - kondensator startowy
run capacitor - kondensator biegowy
leakage - przeciek
bleeder capacitor - kondensator upustowy
terminal - zacisk
lead - otów

(verbs)
examine - egzaminować
discharge - wyładowywać
calibrate - kalibrować, wzorcować
test - testować

(adjectives/adverbs)
faulty - uszkodzony
good (capacitor) - dobry
open (capacitor) - otwarty
shorted (capacitor) - zwarty (kondensator)
grounded - uziemiony

Lab 24

(nouns)
motor overload - zabezpieczenie przeciążeniowe silnika
overload protector - zabezpieczenie przeciążeniowe
terminal cover - pokrywa zacisków
wiring - przewody instalacji elektrycznej
compressor - kompresor
shell - powłoka, warstwa
ammeter - amperomierz
power source - źródło mocy
starting current - natężenie startowe
time fuse - bezpiecznik czasowy
bimetal strip - taśma bimetaliczna
bimetal overload - przeciążeniowe zabezpieczenie bimetal
motor winding - uzwojenie silnika
internal overload - zabezpieczenie przeciążeniowe wewn
current draw - prąd użyty przez maszynę, czerpany z sieci
hermetic compressor - kompresor hermetyczny
burnout - przepalony
component - składnik
diagram - diagram
part number - numer części
specification - specyfikacja, wyszczególnienie
parts catalog - katalog części, spis
overheating - przegrzanie
snap action - akcja zatrzaskowa, migawkowa

(verbs)
draw - czerpanie, ciągnąć, rysować
isolate - oddzielać, izolować
set - nastawiać, zastygać
melt - topić się
burn out - spalić się
bend - wyginać
withstand - stawiać opór, przeciwstawiać się
snap - zatrzaskiwać

(adjectives/adverbs)
sensitive - czuły, wrażliwy
excessive - nadmierny
temperature operated - sterowanie temperaturą
warunki temperaturowe

Labs 25-28

(Important vocabulary for these labs is also found in lab 13.)

(nouns)
hermetic compressor - hermetyczny kompresor
compressor starter - rozrusznik kompresora
compressor housing - obudowa kompresora
service valve - zawór sterujący, roboczy
gage manifold - przyrząd pomiarowy z przewodem
gage port - otwór przelotowy w przyłączu pomiar.
head pressure - ciśnienie w kondensorze
amperage - natężenie prądu
overload relay - przekaźnik przeciążeniowy
windings - uzwojenie, zwojnica
motor mount - montowanie silnika
suction line - linia zasysająca
discharge line - linia wyładowcza
burnout - wypalić się, przepalić się
acid - kwas
solvent - rozpuszczalnik
expansion valve - zawór do regulacji ciśnienia
oil test kit - urządzenie do sprawdzania, czy olej jest dobry
oil plug - zatyczka zbiornika z olejem
oil syringe - strzykawka olejowa
crankcase - skrzynia korbowa
Schrader valve - nazwa własna zaworu
malfunction - coś, co nie pracuje prawidłowo
torch - palnik
soldering - lutowanie
brazing - lutowanie srebrem

(verbs)
connect - łączyć
disconnect - rozłączać
stabilize - stabilizować
clamp - zaciskać, mocować
seal - uszczelniać
remove - usuwać
clean out - oczyścić
apply - stosować, używać
attach - przymocować
charge - ładować, obciążać
pump - pompować
vibrate - drgać, wibrować

(adjectives/adverbs)
electrical - elektryczny
defective - uszkodzony, wybrakowany, z defektem
faulty - uszkodzony
mounted - zamontowany
spring mounted - zamocowany sprężynowo
acidic - kwaśny
caustic - zasadowy

Labs 29-31

(nouns)
evaporator - parownik
fin - żebro
fin comb - żebro grzebieniowe
leak detector - wykrywacz przecieków
tubing - rurka
soldering tools - narzędzia do lutowania
moisture indicator - wykrywacz wilgoci
air cooled condensor - skraplacz chłodzony pow. 4rem
dents - nacięcia, karby
fan - wiatrak, wentylator
fan blade - skrzydło wentylatora
support brackets - wspornik, podpora podpierająca
braces - wzmocnienia, usztywnienia
cleaner - środek czyszczący

(verbs)
mount - montować,
level - wyrównywać, nastawiać
relieve (pressure) - ulżyć, złagodzić
pressurize - naciskać, wywierać ciśnienie
charge - ładować
clean - czyścić
locate - umieszczać, lokalizować
repair - naprawiać
straighten - wyprostować, uporządkować
recheck - sprawdzić ponownie

(adjectives/adverbs)
electronic (leak detector) - elektroniczny
halide (leak detector) - halogenowy wykrywacz przecieków
air cooled - chłodzony powietrzem
damaged - uszkodzony
oily - zawierający olej

BEST Vocabulary (Spanish)
Labs 21-31

Refrigeration
Labs 21-22

(nouns)
drier- secador
filter-filtro
filter-drier-filtro - secador
replacement-reemplazamiento
arrow- flecha
orifice - orificio
moisture - humedad
expansion valve - Valvula de expansion
capillary tube - tubo capilar
strainer- cedazo
restriction- restricion
inlet - entrada
outlet - salida

(verbs)
check - revisar
replace - reemplazar
install - instalar
dissolve - disolver
corrode - corroer
equalize (pressure) - balanzar
crimp - torcer

(adjectives/adverbs)
absorbent - absorbente
clogged - obstruido
corroded - corroido
soaked - ensabonado
swaged - avellanado

Lab 23

capacitor - capacitor
start capacitor - capacitor de arranque
run capacitor - capacitor de marcha
leakage - escape
bleeder capacitor - capacitor de descarga
terminal - terminal
lead - punta de prueba de un instrumento

(verbs)
examine - examinar
discharge - descargar
calibrate - calibrar
test - probar

(adjectives/adverbs)
faulty - defectuoso
good (capacitor) - bueno
open (capacitor) - abierto
shorted (capacitor) - capacitor en cortocircuito
grounded - aterrizado

Lab 24

(nouns)
motor overload - dispositivo de sobre carga
overload protector - Protector de sobre carga
terminal cover - cubierta de terminales
wiring - alambrado
compressor - compresor
shell - cubierta
ammeter - amperimetro
power source - fuente de potencia
starting current - corriente de arranque
time fuse -
bimetal strip - cinta bimetalica
bimetal overload - Protector bimetalico
motor winding - embobinado del motor
internal overload - sobrecaga interna
current draw - consumo de corriente
hermetic compressor - compresor hermetico
burnout - quemado
component - componente
diagram - diagrama
part number - numero de parte
specification - especificacion
parts catalog - catalogo de partes
overheating - sobrecalentamiento
snap action - accion rapida

(verbs)
draw - consumir
isolate - insular, aislar
set - adjustar, fijar
melt - fundir
burn out - quemar
bend - doblar
withstand - soportar
snap - la accion de moverse rapidamente

(adjectives/adverbs)
sensitive - sensitivo
excessive - excesivo
temperature operated - operado termicamente

Labs 25-28

(Important vocabulary for these labs is also found in lab 13.)

(nouns)

hermetic compressor	– compresor hermetico
compressor starter	– arrancador del compresor
compressor housing	– Jaula de compresor
service valve	– valvula de servicio
gage manifold	– manometro de Presion
gage port	– agujero para monometro
head pressure	– Presion del lado de alta
amperage	– amperaje
overload relay	– relay de sobrecarga
windings	– embobinados
motor mount	– montura de motor
suction line	– linea de succion
discharge line	– linea de descarga
burnout	– quemada
acid	– acido
solvent	– solvente
expansion valve	– valvula de expansion
oil test kit	– juego para probar aceite
oil plug	– tapon de aceite
oil syringe	– instrumento para echar aceite
crankcase	– carter
Schrader valve	– valvula Schrader
malfunction	– mal funcionamiento
torch	– antorcha
soldering	– soldadura
brazing	– soldadura de Bare de plata

(verbs)

connect	– conectar
disconnect	– desconectar
stabilize	– estabilizar
clamp	– sujetar
seal	– sellar
remove	– remover
clean out	– limpiar
apply	– aplicar
attach	– atar
charge	– cargar
pump	– bombear
vibrate	– vibrar

(adjectives/adverbs)

electrical	– electrical
defective	– defectivo
faulty	– defectuoso
mounted	– montado
spring mounted	– montado sobre resorte
acidic	– acido
caustic	– caustico

Labs 29-31

(nouns)

evaporator	– evaporador
fin	– aletas
fin comb	–
leak detector	– detector de fugas
tubing	– tuberia
soldering tools	– herramientas para solder
moisture indicator	– indicador de humedad
air cooled condensor	– condensador enfriado por aire
dents	– abolladuras
fan	– abanico
fan blade	– Ala o paleta de abanico
support brackets	– soportes
braces	– soportes
cleaner	– limpiador

(verbs)

mount	– montar
level	– nivelar
relieve (pressure)	– aliviar
pressurize	– presurizar
charge	– cargar
clean	– limpiar
locate	– localizar
repair	– reparar
straighten	– enderezar
recheck	– volvera chequear

(adjectives/adverbs)

electronic (leak detector)	– electronico
halide (leak detector)	– halogeno
air cooled	– enfriado por aire
damaged	– dañado, averiado
oily	– aceitoso

VESL Competencies

The VESL instructor in our bilingual vocational training program plans the VESL course based on a specific set of learning priorities and goals. First, English skills necessary for survival in an English speaking environment are taught throughout the course. These may include: Filling out forms, giving information orally, requesting information, using the telephone, using public transportation, etc. Whenever possible, lessons which teach these skills are designed to relate directly to the program's vocational content-heating and air conditioning. Thus, ideally these survival skills are not taught separately, but are subsumed within other vocationally related English competencies.

The VESL instructor also teaches English skills necessary for training. Trainees must learn the essential vocabulary and grammar to be able to follow instructions. They must also be equipped to request and give task-related information. The reading skills necessary for technical reading are also developed.

Foremost, the VESL component of the program emphasizes the English skills necessary to work effectively on the job when classroom training has finished. Workers must communicate with customers, co-workers and supervisors, and must have the oral comprehension, reading and writing skills to meet the professional demands of the specific occupation.

Finally, the language skills directly involved in looking for, obtaining and keeping a job are addressed in the last weeks of instruction.

A preliminary listing of the VESL competencies emphasized in our program follows, as well as sample competency sheets and related instructional materials (pp.87-96). For a more comprehensive look at the VESL curriculum, refer to the Project BEST VESL Curriculum, which comprises a separate document.

Project BEST

VESL

Vocational English as a Second Language Competencies for Project BEST

A. Job Safety

1. Briefly describe appropriate clothing and personal safety equipment for lab and job.
2. Briefly describe proper maintenance of work area and tools.
3. Identify types and uses of fire extinguishers.
4. Understand and respond to warnings on signs, labels, and service manuals.
5. Identify potential hazards and state how to correct them.
6. Warn others of hazards.
7. Report accidents in simple terms.
8. Describe proper lifting procedures.

B. Tools and Equipment

1. Identify a service technician's tools.
2. Identify parts of a heating system.
3. Identify parts of a refrigeration/air conditioning system.
4. Describe function and usage of work related supplies with appropriate descriptors.
5. Describe function and usage of work related equipment and tools.

C. Requesting Information

1. Indicate shortage of supplies.
2. State need to replace defective part.
3. Borrow tools or equipment.
4. State problem and ask for assistance from co-worker, instructor, or supervisor.
5. Request supervisor/ trainer to check work.

D. Giving and Receiving Information

1. Describe heating and refrigeration/air conditioning related procedures.
2. Report on progress of a specific task.
3. Report on a procedure completed.
4. Respond appropriately to positive and negative feedback.
5. Offer explanation or apology for incomplete or unsatisfactory work.
6. Respond to inquiry by giving an oral diagnosis of mechanical problem or malfunction.

E. Clarification

1. Express understanding or lack of understanding.
2. Ask someone to repeat a word, phrase, or set of instructions.
3. Ask someone to speak more slowly.
4. Ask someone to pronounce or spell a word.
5. Request meaning of word, phrase, sentence, or abbreviation.
6. Request name or function of an object or substance.
7. Verify comprehension by repeating a word, phrase, or set of instructions.

F. Reading Skills

1. Use a table of contents and index to locate information.
2. Understand and use technical graphs and charts.
3. Locate parts in a parts catalogue; give specifications, prices, etc.
4. Summarize a set of procedures from lab manual.
5. Summarize a brief reading passage from textbook.
6. Summarize instructions from service manuals.

G. Writing Skills

1. Write names of parts and services commonly used on invoices.
2. Write brief job-related messages.

H. Giving and Asking for Locations/Directions

1. Ask for location of desired or needed objects.
2. Explain location of object relative to other objects or storage facilities.
3. Direct someone to a location within a building.
4. Explain location of residence or important buildings relative to city landmarks.
5. Following oral instructions, locate places on a map.
6. Request driving directions to a specific location.
7. Give driving directions to a co-worker.

I. Socializing

1. Introduce yourself and others.
2. Greet a customer, co-worker , or supervisor.
3. Respond appropriately to greetings, statements, and inquires from customers, co-workers, and supervisors.
4. Hold a social conversation with a customer, co-worker, and supervisors.
5. End a conversation; say good-bye.

J. Telephoning

1. Call in an emergency.
2. Call in sick/late to job or class.
3. Call to request information or assistance.
4. Call to set up an appointment.
5. Call in to order parts.
6. Take written telephone messages.

K. Specialized Job Seeking/Keeping Skills

1. Call for information about job opening; make appointment for interview.
2. Respond to newspaper advertisement by writing letter of application (sample letter).
3. Fill out job application.
4. Respond to interview questions about job interest, work history, educational background, family, health, transportation, salary, etc.
5. Ask questions regarding work conditions, employment policies, salary, benefits, etc.
6. State desired job and shift preference and starting date.
7. Request time off or schedule change.
8. Report absence or tardiness.

A. Job Safety

Project BEST

VESL COMPETENCY A1 : Briefly describe appropriate clothing and personal safety equipment for lab and job.

GRAMMATICAL / LANGUAGE FORMS: Modal-should, infinitive phrase, present continuous.

LANGUAGE SAMPLES:

Instructor: Why should you wear work shoes when you are working on a system?

Student: (You should wear work shoes) to protect your feet (from falling objects.)

RELATED LANGUAGE ITEMS: Teach/Review parts of body and articles of clothing.

SUGGESTED ACTIVITIES: Flashcards- pictures of safety equipment

Clothing worksheet, "should" worksheet

RESOURCES:

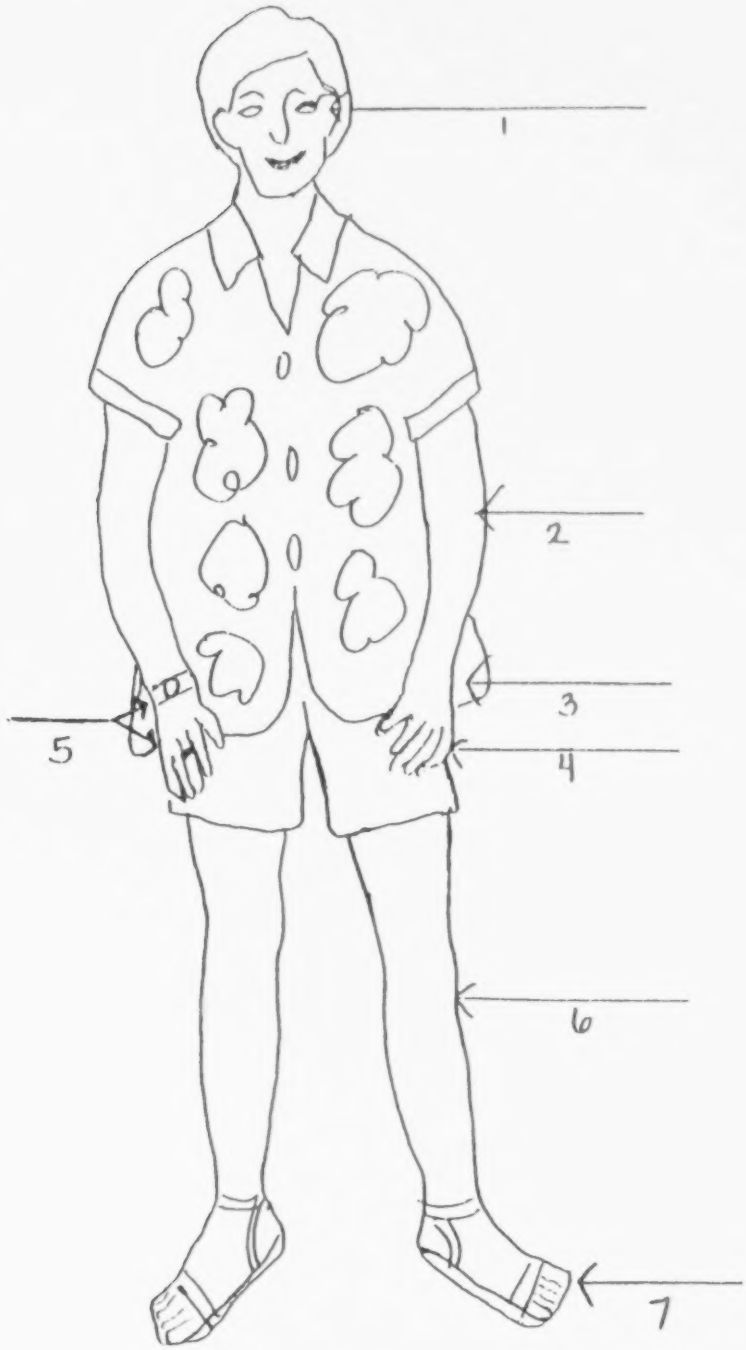
Let's Work Safely! p.12-29

Speaking Up at Work- p.63, 70-71

Developing Shop Safety Skills- p.29

JOB SAFETY WORKSHEET

Instructions: Fill in the blanks. Tell what the person should or shouldn't wear in the lab or an the job.



1. He should wear _____.
2. He should wear a _____ shirt.
3. He shouldn't wear _____ clothing.
4. He should wear _____.
5. He shouldn't wear _____.
6. He should wear _____ pants.
7. He should wear _____.

Answers:

1. safety goggles/safety glasses
2. long-sleeved
3. loose-fitting clothing
4. gloves
5. jewelry
6. long
7. work shoes/ safety shoes/ steel-toed shoes

JOB SAFETY WORKSHEET

Instructions: Answer the following questions in sentences. Use should in your answers. Do not repeat any answers.

1. What should a person wear to protect his/her arms from flying sparks?

2. What should a person wear when working with sharp or heavy objects?

3. What should a person wear to protect his/her eyes from flying particles?

4. What should a person wear so that his/her clothing won't get caught in a machine?

5. What should a person not wear because it could get caught on a machine?

6. What should a person wear to protect his/her legs from injury?

7. What should a person wear to protect his/her toes and feet from falling objects?

Answers:

1. long-sleeves
2. gloves
3. safety goggles/ safety glasses
4. close-fitted clothing
5. jewelry
6. long pants
7. work shoes/ safety shoes/ steel-toed shoes

A. Job Safety

Project BEST

VESL COMPETENCY A2 : Briefly describe proper maintenance of work area and tools.

GRAMMATICAL / LANGUAGE FORMS: Imperatives, Adverb of Frequency/Manner Adjectives.

LANGUAGE SAMPLES:

Instructor: Name two maintenance practices for work area and tools.

Student: Always return all materials and tools to their proper place and keep storage cabinets clean and orderly.

RELATED LANGUAGE ITEMS: Review names of tools, Go over shop safety rules- eg. Do not overload circuits. Do not keep flammable substances near sources of heat. Always clean up spills and debris on floor.

SUGGESTED ACTIVITIES:

Ask students to identify in diagram improper maintenance of work area and tools.

RESOURCES:

Let's Work Safely p.70, 71

Developing Shop Safety Skills- p.12, 13

Speaking Up at Work- p.71-73

105 Taken from Linda Mrowicki's book, Let's Work Safely!

A. Job Safety

Project BEST

VESL COMPETENCY A3 : Identify types and use of fire extinguishers.

GRAMMATICAL / LANGUAGE FORMS: There are, used for, yes/no question-Be

LANGUAGE SAMPLES:

Instructor: What types of fire extinguishers are there?

Student: There are foam, carbondioxide, and dry chemical fire extinguishers.

Student: Is type C fire extinguisher used for electrical fires?

Instructor: Yes ,it is.

RELATED LANGUAGE ITEMS: Vocabulary related to fires (ordinary combustibles, flammable liquids, grease, etc.) and fire extinguishers (foam, carbon dioxide, dry-chemical, etc.)

SUGGESTED ACTIVITIES:

Simulated demonstration of use of fire extinguishers. Have students locate nearest fire extinguishers and identify type of extinguishers.

RESOURCES:

Developing Shop Safety Skills

Let's Work Safety- p.86-88

Speaking Up at Work

FIGURE 78. Type ABC fire extinguisher for use in shops effective against all classes of fires.

Fire extinguishers are rechargeable and should be checked periodically for charge (Figure 80).

FIGURE 80. A fire extinguisher must be inspected regularly and be fully charged.

KIND OF FIRE		APPROVED TYPE OF EXTINGUISHER						
		MATCH UP PROPER EXTINGUISHER WITH CLASS OF FIRE SHOWN AT LEFT Important! Using the wrong type extinguisher for the class of fire may be dangerous						
DECIDE THE CLASS OF FIRE YOU ARE FIGHTING...	...THEN CHECK THE COLUMNS TO THE RIGHT OF THAT CLASS	FOAM Solution of Aluminum Sulphate and Bicarbonate of Soda	CARBON DIOXIDE Carbon Dioxide Gas Under Pressure	SODA ACID Bicarbonate of Soda Solution and Sulphuric Acid	PUMP TANK Plain Water	GAS CARTRIDGE Water Expelled by Carbon Dioxide Gas	MULTI-PURPOSE DRY CHEMICAL	ORDINARY DRY CHEMICAL
CLASS A FIRES Use These Extinguishers ORDINARY COMBUSTIBLES • Wood • Paper • Cloth, Etc.		✓		✓	✓	✓	✓	
CLASS B FIRES Use These Extinguishers FLAMMABLE LIQUIDS, GREASE • Gasoline • Paints • Oils, Etc.		✓	✓				✓	✓
CLASS C FIRES Use These Extinguishers ELECTRICAL EQUIPMENT • Motors • Switches, Etc.			✓				✓	✓

FIGURE 79. Matching fire extinguishers to classes of fires.

Taken from Developing Shop Safety Skills

Project BEST

Job Finding/Keeping Skills

Competencies for Finding and Keeping a Job in the U.S.

A. New Attitudes in a New Country

1. Understand importance of maintaining a positive, self-confident attitude when looking for work.
2. Understand necessity of improving English communication skills in order to find and keep a job.
3. Be familiar and discuss job opportunities related to the building energy maintenance field.

B. Finding a Job

1. Know how to use relatives, friends, and acquaintances to help locate job opportunities.
2. Use knowledge of the neighborhood to locate potential employers.
3. Refer to telephone directory to identify potential employers.
4. Refer to newspaper ads for job openings.
5. Use directories and newspaper ads as a basis for initial contacts to employers.
6. Make telephone calls to potential employers.
7. Write a cover letter to a potential employer.
8. Fill out a job application form.
9. Write a personal resume with help and advice from program staff.
10. Discuss and practice job interview techniques.
11. Understand importance of follow-up phone calls to employers.
12. Discuss importance of being persistent but also dealing with rejection when applying for jobs.

C. Keeping a Job

1. Understand and discuss the American work ethic.
2. Understand and discuss the expectations of employers.
3. Understand and role-play social behavior among co-workers.
4. Understand and discuss the concepts of punctuality, reliability, and cooperativeness.
5. Practice requesting information or special concessions related to work schedule and job expectations. (See list of VESL competencies related to job finding/keeping.)
6. Understand and discuss importance of continued learning experiences for maintaining job security.

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9/86-1/87	Oakton Community College Des Plaines, IL	Vocational Program Heating & Air Conditioning	Certificate
9/77-6/82	Technical High School Sosnowiec, Poland	Rail Transportation Safety	Diploma

WORK EXPERIENCE:

6/86-9/86	Best Western O'Hare Des Plaines, IL	Maintenance Helper
4/86-6/86	QC Finishers, Inc. Franklin Park, IL	Painter's Helper
3/86-4/86	Masterline Tool Co. Bensenville, IL	Drill Operator

LANGUAGES:

Polish and Basic English.

INTERESTS:

Technical Interests, Model Building, and Music.

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PROJECT BEST

Building Energy Systems Technology
-Heating/Air Conditioning-
For Students of English as a Second Language

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Project BEST Update
July, 1987

In late June Project BEST received the unfortunate news that the program had not been selected for refunding by the federal funding source, the Office of Bilingual Vocational Education, U.S.D.E. Due to federal cutbacks in the budget, only about one-third of the 19 bilingual vocational training programs funded for the 1986-1987 18-month grant period could be refunded for the upcoming 1987-1988 grant period.

It is hoped that at least some components of this "BVT" program can be either institutionalized or continued in some form independent of federal dollars.

ERIC Clearinghouse for
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